PULP & PAPER

SEPTEMBER 1958

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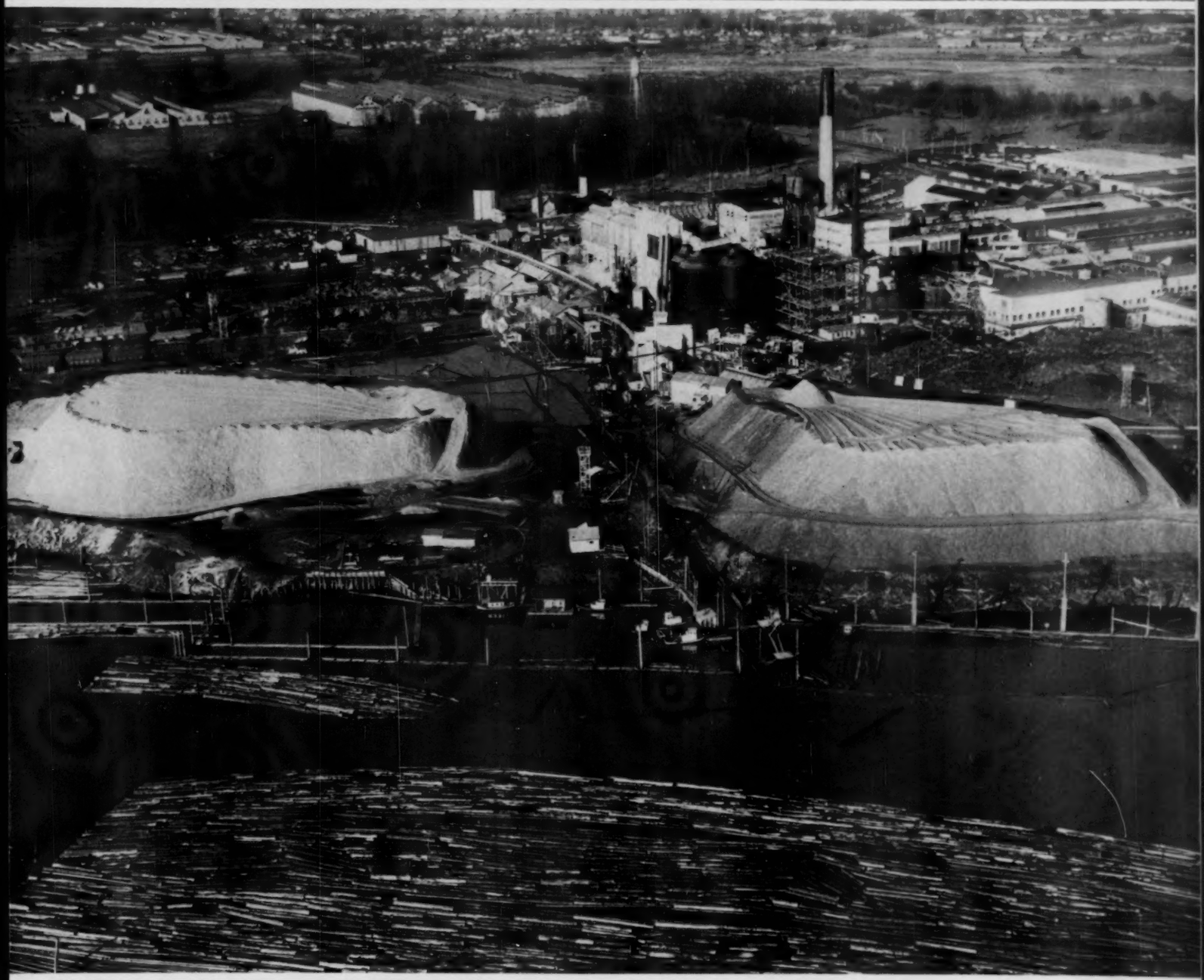
Flash Drying of Pulp page 72

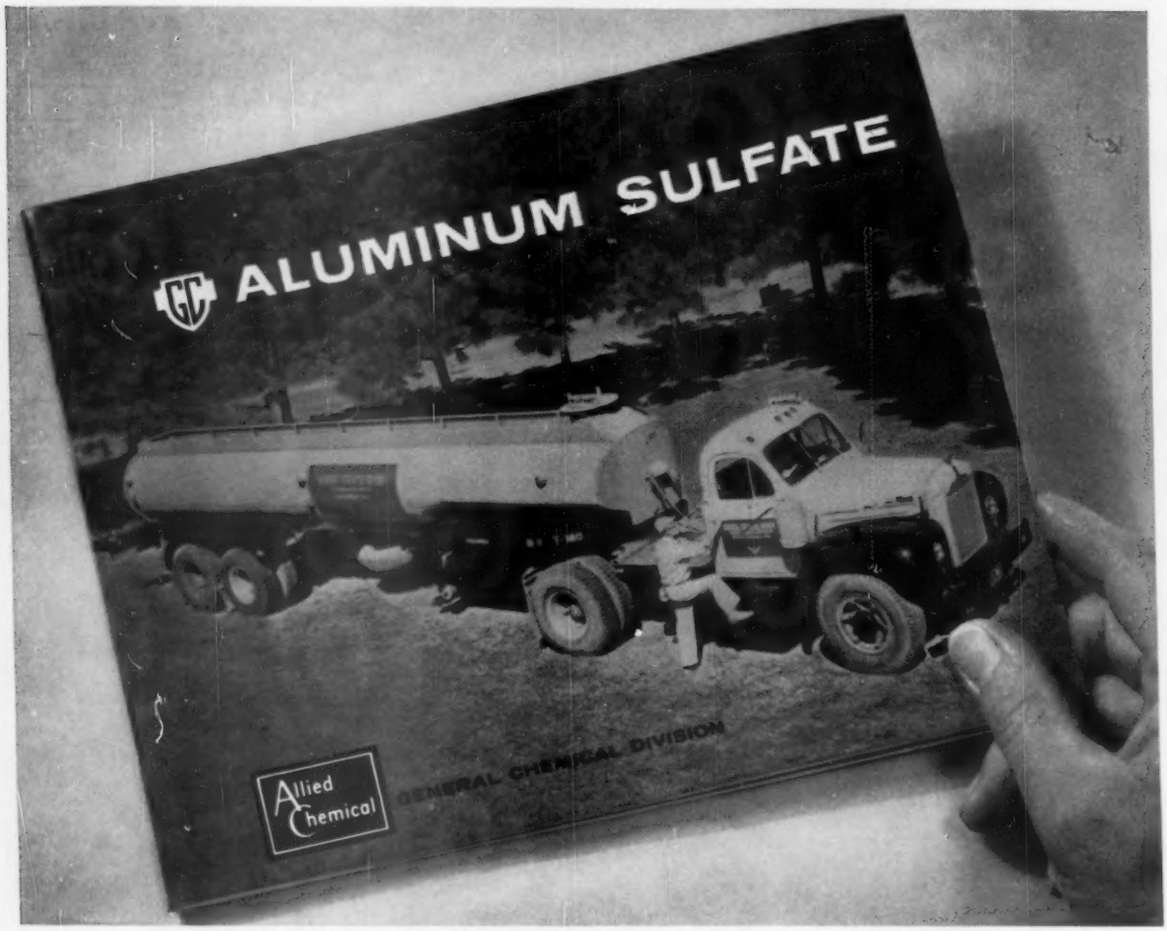


OUTSIDE CHIP STORAGE – survey of fast growing trend

(above: 12 acres of chips sprawl on blacktop at Longview Fibre)

story on page 129

NOW! from General Chemical...



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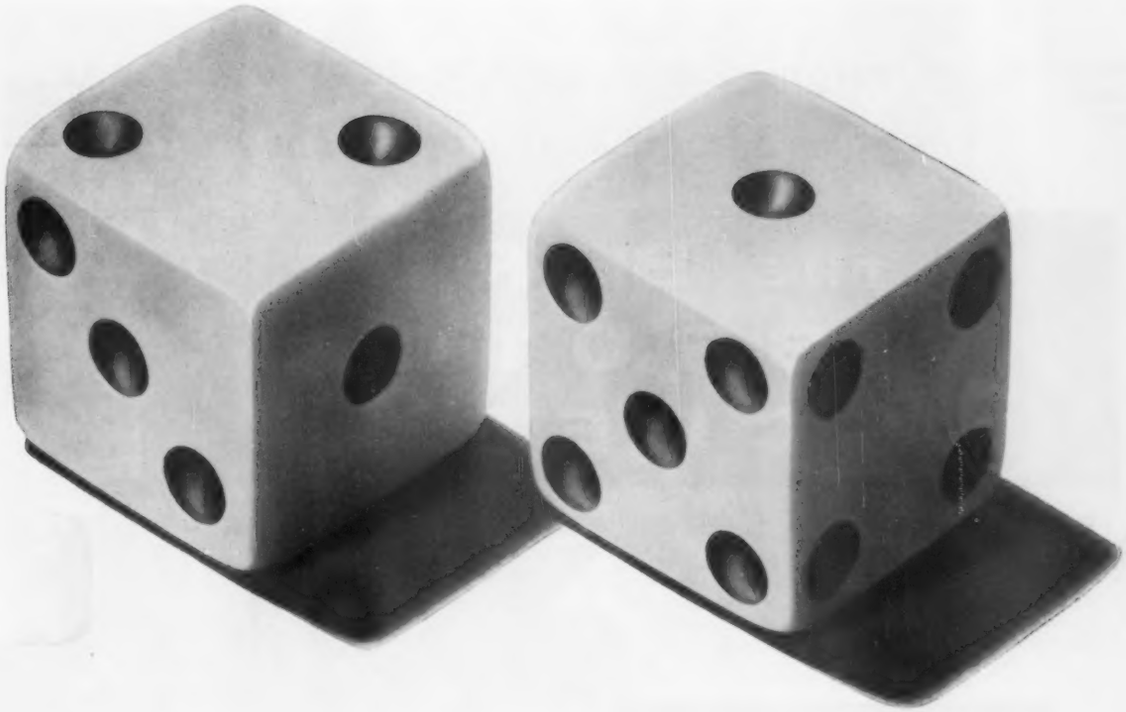

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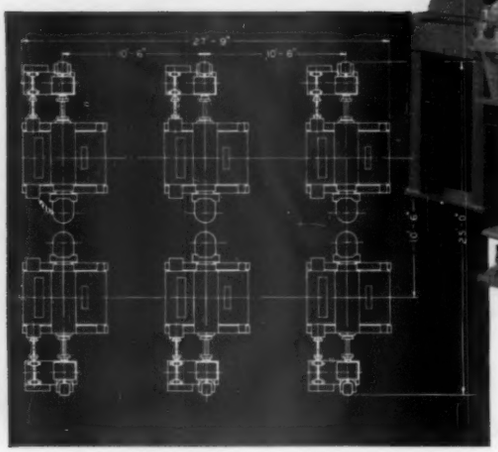

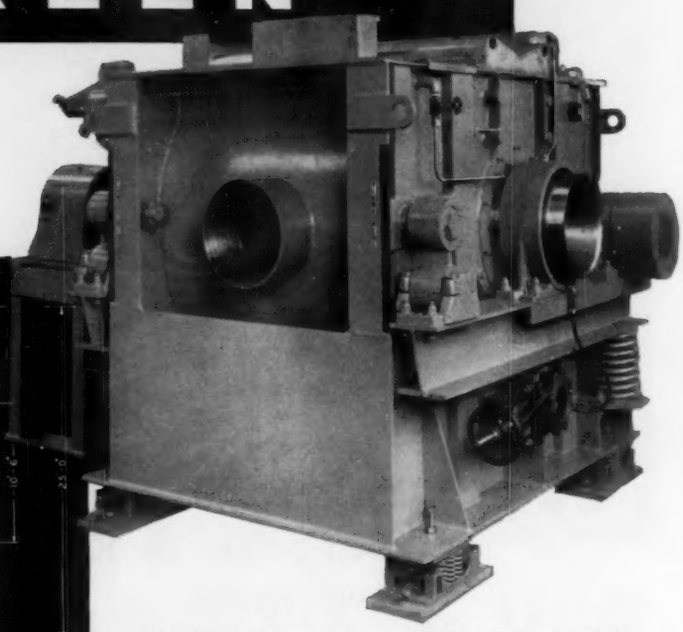

Note how little space is required for this layout of six Vibrotor Screens, shown at left. Piping can be installed below the Screens when desired.

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PULP & PAPER

Reader's Guided Tour

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NUMBER 10

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Good example set in Canada; Research outside industry helps develop paper and paperboard markets

Engineering Predictions 63

PULP & PAPER editors at TAPPI's Engineering Conference buttonholed 38 engineers, asked them to sound off on up-and-coming developments. They did. Maybe you'll agree, maybe you won't. But you should read it.

Fluff Drying of Groundwood 72

Here's a mill's-eye view of a new pulping process that may have far-reaching effects upon processing of market pulps, freight costs and overseas markets.

Eight Years of Growth at Potlatch 82

Pacing the growth of foodboard and pioneering where others have dread to tread—that's the story of PFI. We think you'll enjoy this P&P profile of Potlatch.

Breaking the High Speed News Barrier 76

Realizing its existing machines had about "had it" as far as speed was concerned and wishing to take full advantage of its tremendous timberlands, St. Croix enters the high speed newsprint field.

Automatic High Speed Sheet Counter 81

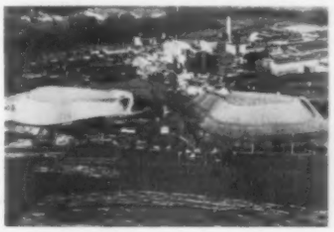
It's uncanny and almost unbelievable the way this sheet counter makes its way up a skidload of sheets. But it's also unerring and that's why U.S. currency is counted by Vacuumatic.

Outside Chip Storage 81

There's a lot of interest today in storage of chips outdoors—and West Coast mills are not the only eager-beavers. But they lead the way, and P&P's Western editor reveals findings of survey among them.

COVER PICTURE

Longview Fibre stores chips outside on 12 acres of blacktop, 90,000 unit capacity. Pneumatic systems discharge to piles. Then chips are spread by tractor-mounted bulldozer and scoop.



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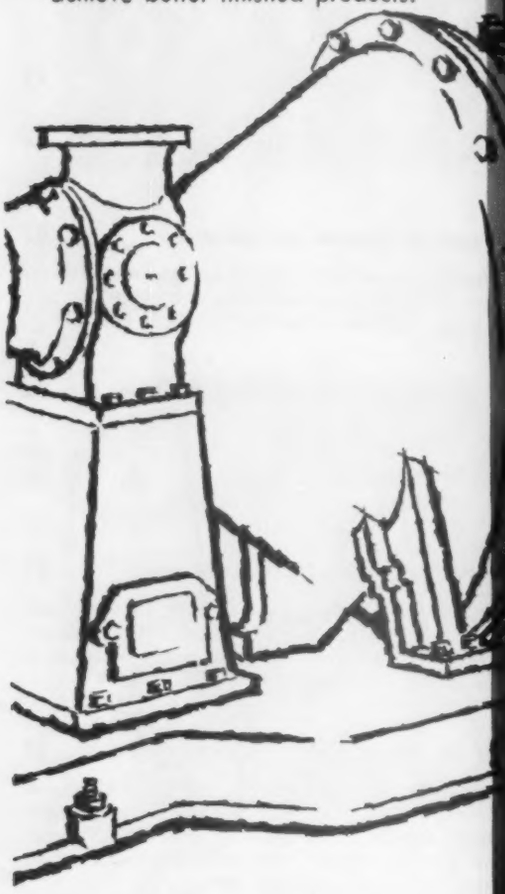

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The Editor Reads His Mail

Address letters to The Editor, PULP & PAPER, 1791 Howard St., Chicago 26, Ill.

Predicting Future Trends

—Pullman, Wash.

Editor: Among the difficulties in comparing present performance in the industry with that of the past, as well as predicting what's going to happen in the future, are the changes in classification that occur from time to time. For example, the figure for "all other paper" has included different categories over the years. The category "book" paper which once was used is now "book and groundwood" and therefore the two are not comparable. Also, the category "wrapping and bag" is now "coarse" and also not comparable.

The basic assumption I make in predicting future trends (Eds. note—which he did very accurately a few years ago) is that the rate of growth of per capita consumption and of total consumption will continue at about the same level or at a slightly lower level over future long term than was experienced over a long period in the past.

J. A. GUTHRIE
Director
Bureau of Economic and Business Research
State College of Washington

Liked Coating Reports

Editor: May I congratulate you on your fine article in the July issue on the Coating Industry? I am sure that everyone interested in coating will get valuable meat out of your article, and I think it is exceptionally well written and factual.

HAROLD M. ANNIS
Technical Director
Oxford Paper Co.

MEETING DATES CALENDAR

Sept. 4-6
APPMSA, New York-Canadian Div.
Lake Placid Club, Lake Placid, N.Y.

Sept. 10-12
3rd International Mechanical Pulping Conference
Chateau Frontenac Hotel, Quebec, Que.

Sept. 12-13
APPMSA, Northwestern Div.
Conway Hotel, Appleton, Wis.

Sept. 14-19
European TAPPI Study Group Annual Meeting
Turino, Italy

Sept. 15-17
3rd International Fundamental Research Symposium
Queen Elizabeth Hotel, Montreal, Que.

Sept. 17
TAPPI Instrumentation Seminar
Everett, Wash.

Sept. 18-20
APPMSA Northeastern Div.
Poland Spring House, Poland Spring, Me.

Sept. 24-26
TAPPI Alkaline Pulping Conference
Hot Springs, Ark.

Sept. 30-Oct. 2
TAPPI Testing Conference
Gen. Oglethorpe Hotel, Savannah, Ga.

Oct. 3-4
APPMSA Connecticut Valley Div. and TAPPI New England Section
Berkshire Inn, Great Barrington, Mass.

Oct. 9-10
TAPPI Deinking Conference
Biltmore Hotel, Dayton, O.

Oct. 10-11
APPMSA Penjerdel Div.
Bedford Springs Hotel, Bedford Springs, Pa.

Oct. 14-16
Society of Industrial Packaging and Materials Handling Engineers
Chicago Coliseum, Chicago, Ill.

Oct. 15-17
APPMSA Southern and Southeastern Divs.
Read House, Chattanooga, Tenn.

Oct. 20-22
TAPPI Plastics-Paper Conference
Sheraton-Kimball Hotel, Springfield, Mass.

Oct. 20-24
Annual National Safety Congress
Conrad Hilton Hotel, Chicago, Ill.

Nov. 4-6
Canadian National Packaging Exposition
Exhibition Grounds, Toronto

Nov. 5-6
TAPPI Corrugated Containers Conference
Cincinnati, O.

Dec. 4-6
APPMSA Pacific Coast Div.
Sir Francis Drake Hotel, San Francisco, Calif.

Jan. 28-30
CPPA Annual Meeting
Queen Elizabeth Hotel, Montreal, Que.

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General Outlook . . .

FIRST SIGNIFICANT PLUS MONTH for the folding carton industry occurred in June when shipments scored a 1.9% tonnage gain, the first this year. Dollar volume was up 3.3%.

PREDICTS RISE IN PROFITS AS WELL AS SALES. . . . David L. Luke, pres. of West Virginia Pulp & Paper Co., expects earnings in the fourth quarter to be better than a year ago. Earnings for the third quarter ending July 31 "may be somewhat below" the like quarter last year," he said, "although sales should be higher." The industry may be starting an upturn, but it's too early to be sure, in his opinion.

DECLINE IN PRODUCTION FOR PAPER AND BOARD INDUSTRY will be substantially less than the average of all manufacturing industries compared to the first half of 1957, according to W. LeRoy Neubrech in the latest "Pulp, Paper and Board Industry Report." Output in the first half of '58 should approach 15 million tons compared to 15.5 million in 1957.

CONSTRUCTION HITS NEW RECORD. . . . Dollar value of new construction zoomed to $4.6 billion in July, topping $4.4 billion in June and $4.5 billion July, 1957, according to preliminary estimates by the Commerce and Labor departments. This means increased demand for building board and other pulp and paper products.

Mills and Mill Plans . . .

HALIFAX TO ADD NEW MACHINE. . . . Halifax Paper Co., div. of Albemarle Paper Mfg. Co., Richmond, Va., will add a 246 in. Beloit machine to the one in operation for past five years. Machines will be twins with notable exception that the new machine will be driven by electric motor instead of turbine. Mill has 500 tons a day pulp capacity.

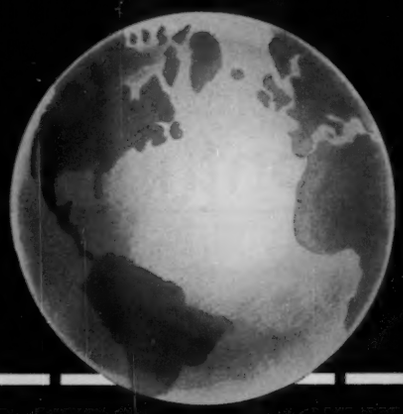
WILL GO AHEAD WITH EXPANSION. . . . Howard Smith Paper Mills will add a paper machine, hardwood handling equipment, boiler, finishing building, welfare building and stock preparation machinery at its Cornwall, Ont., div. The new machine, scheduled for startup by Mar. 1960, will increase the mill's capacity about 50% to 100,000 tons of fine paper annually.

PLANS NEW PLANT IN GEORGIA. . . . Sutherland Paper Co. will construct a $1.5 million plant for manufacture of paper cups, plates, pre-packaging meat, produce trays, paraffin and folding dry cartons at Albany, Ga. Target date: late 1958.

WILL DOUBLE CAPACITY. . . . Completion of a multi-million dollar addition at Buckeye Cellulose Corp.'s mill at Foley, Fla. by year's end will double original capacity of the plant. Timber holdings have been increased to over 800,000 acres to keep pace.

POSTPONE STARTUP OF NEW MACHINE. . . . Abitibi Power & Paper Co., Ltd., is postponing startup of its new machine at Fort William because the company's production capacity has not been fully utilized for more than a year, according to Pres. D. W. Ambridge.

Please turn page for more



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WILL INSTALL NEW COATER AND BUILDING TO HOUSE IT. . . . Blandin Paper Co. is preparing to install a new clay coating machine being built by Rice-Barton Corp., with parts being designed by Central States Engineering. A G.E. drive to operate the coater at 3,000 fpm will also be installed. Paper will be dried by Gardner driers, made by Overly Corp.

EXPANSION STYMIED TILL '61. . . . National Container div. of Owens-Illinois Glass Co., which has already spent $250,000 in recent expansison at its Jacksonville mill, will have to wait till 1961 to complete plans for major facelifting. At that time leases on 60 acres of land north of the mill will expire and National Container will acquire them.

BELIEVED TO BE THE WORLD'S LARGEST. . . . A supercalender recently installed at Nicolet Paper Corp., West De Pere, Wis., weighs 125 tons and measures 28 ft. 7 in. Designed and built by Appleton Machine Co., it may be operated either as a 16 roll or 15 roll supercalender. A new Cameron Duplex Rewinder was also installed to accommodate production of the new supercalender.

WILL INSTALL SECOND SPECIALTY CYLINDER MACHINE. . . . Bathurst Power & Paper Co. will increase capacity of high quality boxboard by 25,000 tons annually at its mill in Bathurst, N.B. The second machine will be ready for operation early in 1959.

MODERNIZATION PROGRAM TO BOOST CAPACITY. . . . Capacity and efficiency of Simpson Logging Co.'s insulating board mill at Shelton, Wash., will be increased by installation of additional vacuum pump capacity and a fifth set of press rolls for removing more water from the wet mat. A pump-through refiner will be provided for final stock refining. Program should be complete by the end of '58.

BUILDING NEW MACHINE ROOM. . . . East Texas Pulp and Paper Co., Evadale, Tex., is constructing a new machine room to house a cylinder board machine to be transferred from Southland Paper Mills in Lufkin, Tex. Production is scheduled for early fall.

NEW CHLORINE DIOXIDE BLEACH PLANT COMPLETED. . . . A $3,000,000 ClO_2 plant at Brunswick Pulp and Paper Co., Brunswick, Ga., recently completed, extends manufacturing facilities for high quality paper pulp for Scott Paper Co. and Mead Paper Corp., joint owners of Brunswick. A modern conveying system was installed with aid of Thermoid Co. field men.

Other News . . .

APPROVE PULP EXPORT TO RED CHINA. . . . Ottawa and Washington recently gave official approval to Alaska Pine & Cellulose, Ltd., affiliated with Rayonier Inc., to export bleached sulfite pulp to Communist China. Main problem is, how will they pay for it? H. J. McKenzie, mgr. of Export Sales Co., Vancouver, says most Red China traders are eager for two-way trade or barter rather than straight purchases.

FTC DISMISSES COMPLAINT AGAINST SCOTT. . . . The Federal Trade Commission Hearing Examiner dismissed the alleged monopoly complaint against Scott Paper Co. with respect to acquisitions by Scott of Soundview Pulp Co. in 1951 and Detroit Sulphite Pulp & Paper Co. and Hollingsworth & Whitney Co. in 1954.

Please turn page for more

1. Hydraulic Roll Splitter—splits reject or butt rolls, quickly, safely, economically. See Bulletin MB-121-A.

2. Broke Pulpers—*Duopulper* under the machine takes full sheet width broke. *Hydrabreaker* handles wet or dry broke. Get Bulletin 23-SB.

3. Duotrol—automatic plug adjuster for jordans, Hydrafiners, Hydrabeaters, and disc refiners.

4. Junk Remover and Ragger—Hydrapulper accessories, automatically remove heavy junk, rags, cellophane, etc. from the stock. Ask for MB-102 and MB-104.

5. Hydrabeater—combination pulper-attrition mill features high-speed side-drive rotor. *Hydra-slusher*—side drive unit for fast slushing.

6. Pulper Conveyors—all types available for both batch and continuous operation as well as for broke handling. Write for MB-101.

7. X-66 Jordan Plug—for longer life, better performance. Fillings available in all materials. Ask for Bulletin 22-SB.

8. Control Panels—put all stock preparation equipment under remote centralized push-button control.

9. Stock Distributing Headbox mixes, blends and meters stock to either jordans or vats on cylinder machines.

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PULP & PAPER

Monthly Report

... of significant news and views

A PAPER MARKET LOST? . . . Transparent polyethylene may soon replace the old time "gunny" sack familiar on the farm scene, says Spencer Chemical Co. This possibility comes with announcement that this major producer of farm fertilizer has shifted part of its production (ammonium nitrate) from multiwall paper bags to bags made from polyethylene film.

PILOT MACHINE MAKES CERAMIC FIBER PAPER. . . . Knowlton Bros., Watertown, N.Y., have progressed to pilot machine production runs on a heat-resistant paper made primarily from ceramic fibers.

RCA ORDERS PAPER PHONOGRAPH RECORDS. . . . Paper phonograph records, with grooves pressed in a vinylite coating, have been contracted for by RCA Victor International div. for samplers to be bound into a Latin American hi-fi trade magazine. Electro-Voice, makers of stereo cartridges, are also planning for stereo paper disks to be bound into domestic music consumer magazines. New paper records are reputedly of higher reproduction quality than any seen before.

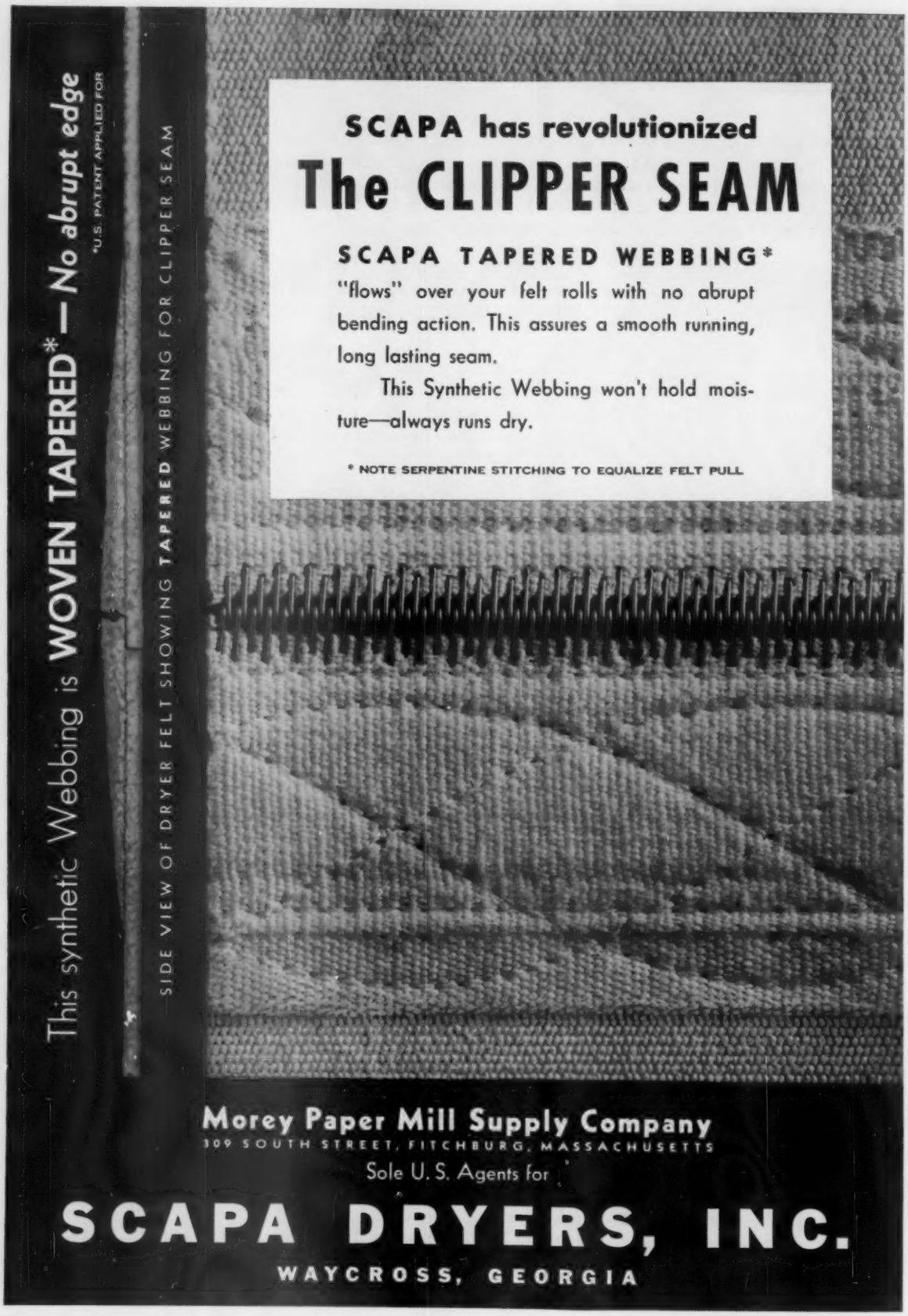
TIN CAN COMPETITION GETS STIFFER. . . . A new tin can plant in Hammond, Ind., "may revolutionize the whole tin can making industry," says Wm. C. Stolk, president of American Can. A new continuous process from blank-cutting to can is featured. Also blanks will be cut from a 3-mile long roll. Can makers expect to make 43.5 billion cans this year, up 4% from 1957, 86% more than in 1946. They are invading paper, glass and other fields. New aerosol cans may soon squirt cheese spray, coffee or syrups; plastic-lined cans may hold acids, bleaches. Cans now pack clocks for supermarket shelves.

BECOMES THIRD LARGEST LANDOWNER IN ARKANSAS. . . . Potlatch Forest Industries, already owners of Southern Lumber Co. in Arkansas, purchased the Bradley Lumber Co. plant and lands in southern Arkansas, making it the third largest landowner in the state. Dierks is number one and Crossett is a close second. Long-term plans call for eventual construction of a pulp and paper mill in the south.

TO MAKE PAPER FROM COTTON STALKS. . . . A multi-million dollar plant under construction near Buttonwillow, Calif., plans to convert cotton stalks into paper pulp, using a process developed by Kerncot Fibre Corp. Over 30,000 acres of cotton has been contracted for with growers, and stalk and root harvesters will start operations immediately after the cotton harvest. Daily output would be 150 tons during the first year of operation, according to Robert N. Whittemore, managing director.

FIRST HALF EARNINGS REPORTS for many firms show decreases in both sales and profits compared with 1957, but in most cases the second quarter was better than the first. Exceptions are Scott Paper Co. and Keyes Fibre Co., with increases in both sales and earnings. Nekoosa-Edwards and Hammermill reported sales up, profits down, for the first six months of '58, as did Kimberly-Clark for the fiscal year ended Apr. 30, during which period sales set a record. A company-wide program to reduce costs and expenses, started well in advance of the recession, enabled Fibreboard Paper Products Corp. to show an increase in earnings even though sales were off, according to Pres. William L. Keady.

PRESSURIZED FOURDRINIER MACHINE TESTED. . . . A newly developed pressurized Fourdrinier paper machine is being tested by Robert Hyslop and James Turner, research employes of Pusey and Jones Corp., under a special arrangement with the Pulp and Paper Foundation at the U. of Maine.


This synthetic Webbing is WOVEN TAPERED*—No abrupt edge
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SIDE VIEW OF DRYER FELT SHOWING TAPERED WEBBING FOR CLIPPER SEAM
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SCAPA TAPERED WEBBING*
"flows" over your felt rolls with no abrupt bending action. This assures a smooth running, long lasting seam.
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WORLD PULP & PAPER General News

Australian Mill To Boost Output

Sydney . . . Two big expansion projects, costing several million pounds, have been started by Australian Paper Manufacturers Ltd. The firm's Botany mill at Matraville, near Sydney, will get a new five million pound kraft paper machine to start up in 1961, bringing A.U.M.'s total paper and board capacity to about 330,000 annually. Walmsleys (Bury) Ltd. are supplying the machine. The second project is to extend No. 1 machine at A.P.M.'s Maryvale mill, increasing capacity there by at least 20%. Installation of 12 new dryers, reeler, rewinder, second calender stack and expansion of the slushing and refining departments are scheduled to be completed by early 1960.

Finnish Industry Will Expand

Helsinki . . . Annual pulping capacity in Finland will be increased by about 1,000,000 tons within the next five to eight years, according to a recent survey by the Central Assn. of Finnish Woodworking Industries. Finnish forests could provide raw materials for an increase of about 1.5 million tons, leaving room for further development.

Report on Asian Trip

New York, N.Y. . . . Newsprint manufacture in Indonesia is impractical at present, says Dr. Charles W. Boyce, consultant to the American Newspaper Publishers Assn., who recently returned from a six month survey of that country. Almost all the original Indonesia forest has been cut off and pulpwood would have to be grown on a plantation basis and processed with high-cost electric power supplied by diesel generators. He did find favorable conditions for establishing small kraft paper mills in several locations, however.

Norway Imports More Machines

Oslo . . . Imports of pulp and paper mill machinery in Norway came to almost 16 million kroner (about $2,240,000) in the first quarter of 1958, a big increase over the 6 million kroner (about $840,000) imported during the corresponding period in 1957.

Plan New Mill in Iraq

Baghdad . . . In spite of political turmoil, work continues on a 27,500 ton-per-year paper mill at Basrah in southern Iraq. Reed and papyrus, abundant in that area, will be used as raw material.

Italian Mill Starts Up

Isola Liri, Italy . . . A new fine paper machine was started up recently at the Isola Liri paper mill of Donzelli S.A., and only three hours later there was approved paper on the roll. The paper mill staff erected the machinery themselves under the direction of Rolf Fjellman of Karlstads Mekaniska Werkstad A/B, Karlstad, Sweden.

Fire Destroys Swedish Pulp

Stockholm . . . About 8,800 short tons of pulp, mainly bleached sulfate, and a large pulp shed were recently destroyed by fire at Mo och Domsjo A/B's Husum sulfate mill. Damage was estimated at between six and seven million kronor (about $1,160,000 to $1,353,000).

Bowaters Mersey Mills Expand

London, England . . . A new No. 5 machine recently started up at the Mersey div. mills of Bowaters United Kingdom Pulp and Paper Mills Ltd., Ellesmere Port, Cheshire. The Walmsleys machine has a maximum trim of 270 in. and is designed for speeds of over 2,000 fpm. A new groundwood mill is under construction, scheduled for startup by the end of the year. Homegrown pulpwood is being stored in preparation and log conveying machinery is being installed.

Kenya Mill Nears Completion

Thika, Kenya . . . A new mill being built by Kenya Paper Mill Co., Ltd., at Thika is expected to begin production in October, 1959. It will use about 7,700 tons annually of locally grown timber, to be increased to about 60,000 tons a year when full capacity is reached.

Guatemalan Mill Expands

Guatemala City . . . Minor Keilhauer, pres., Industria Papelera Guatemalteca, and correspondent in Guatemala for PULP & PAPER, is joining with Arimany y Cia. to expand their cardboard plant to make kraft and bond papers, with production to start in the summer of 1959. The mill will use local and imported pulps. Guatemalan capital is financing the expansion. A large Honduran paper mill, now on the drawing boards, is to make kraft and newsprint pulps for Central America, and the Arimany-Keilhauer concern will produce all other papers for the area.

New Sulfate Mill in Sweden

Stockholm . . . Construction will start next year on a new sulfate mill in Skarbacka, west of Norrkoping, with completion scheduled for early 1962. The new mill will increase Fiskeby Fabriks A/B's annual capacity by about 77,000 short tons of sulfate pulp, most of it for export.

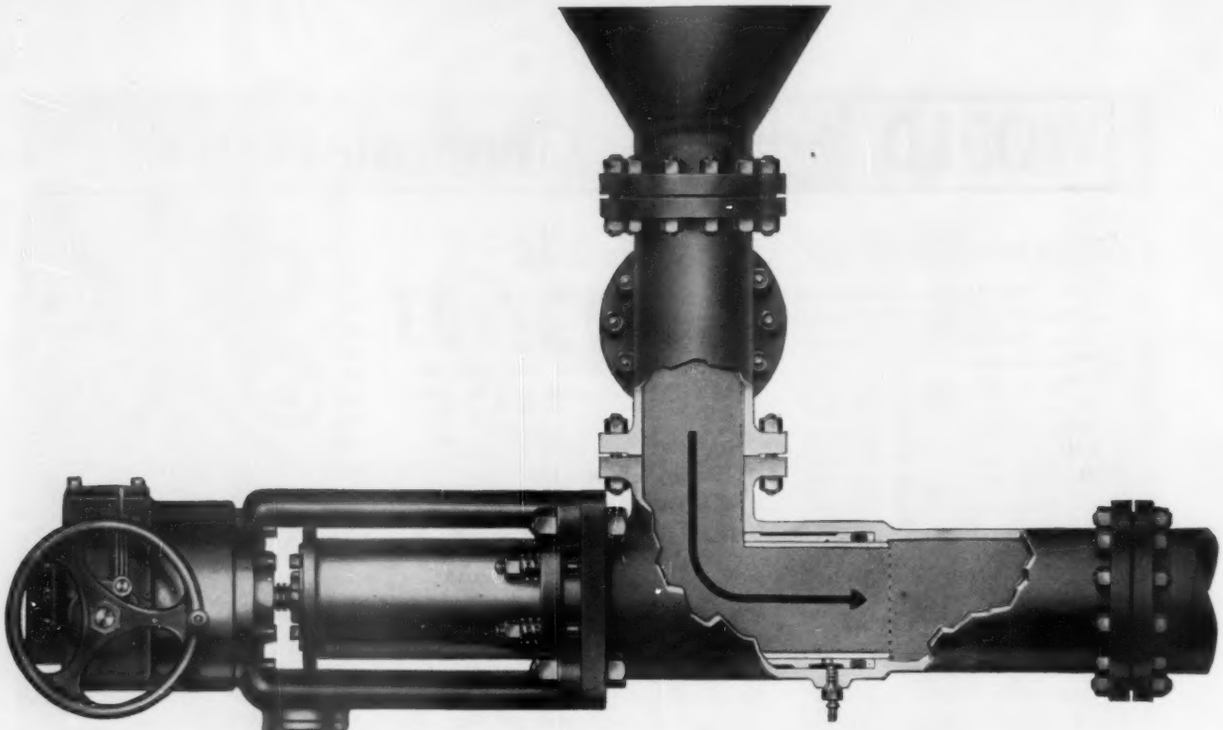
Will Advise Egyptian Firm

Cairo, Egypt . . . Stadler Hurter International, Ltd., consulting engineers with offices in Montreal and New York, has been retained as advisors by RAKTA (Societé de l'Industrie du Papier), Cairo, Egypt, for its proposed mill to produce fine papers from rice, straw and reeds.

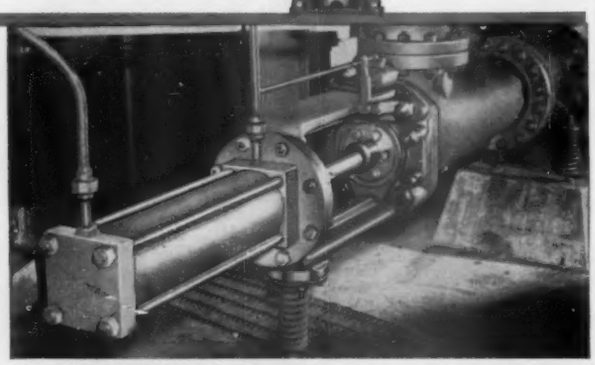
Al Luhrs ..... Mrs. Luhrs

Luhrs Tours Europe

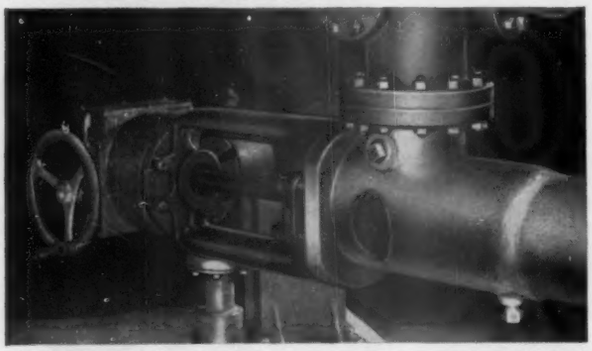
Paris . . . Albert W. Luhrs, executive manager of National Paperboard Assn. and Fibre Box Assn., U.S.A., is completing a nine weeks European tour of paperboard mills and corrugated box plants. Mrs. Luhrs accompanied him. The tour took them to England, France, Italy, Germany and Scandinavia.



full, free digester discharge



HYDRAULIC-OPERATED Yarway Digester Blow Valve—one of six installed at large North Carolina paper mill.



MOTOR-OPERATED Yarway Digester Blow Valve—one of eight installed at large Canadian paper mill.

Digesters blow fast and clean with YARWAY Seatless Blow Valves.

The hollow sliding plunger has no pockets where wood chips or tramp materials can hang up.

All Yarway Digester Valves have full pipe area, permitting fast discharge with minimum pressure reducing blowing time, increasing number of drop. Comparisons show more discharge area . . . cooks.

Scores of pulp mills report *lower operating costs* and *increased production* due to YARWAY Digester Blow Valves. One large mill found *savings in operation and maintenance the first year more than paid the cost of their 4 new Digester Valves!*

YARWAY Seatless Digester Valves can be furnished either with electric motor or hydraulic cylinder units. Both are remote controlled. Bulletin B-441 gives the whole story. Write for it.

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Cooking Tests—Different Chemicals

ENKVIST, TERJE, HOLM, BJÖRN, KOURLA, AARRE, and MARTELIN, JARL ERIK. Experiments concerning the role of redox potential and hemicellulose during sulfate cellulose digestion. Paperi ja Puu 39, no. 6: 297-302 (June, 1957). Bull. Inst. Paper Chem. 28: 11-12.

Laboratory digestions of pinewood with sodium hydroxide solutions containing various reducing agents (pyrocatechol, pyrogallol, glucose, ascorbic acid, zinc powder, arsenious oxide, stannous chloride, metaphosphoric acid, sodium dihydrogen phosphite, potassium iodide, hydrogen, sodium nitrite, formic acid, hydrazine, red phosphorus, or ferrous sulfate) did not show any advantage of the reducing agents, compared with the effect of sulfides normally used in sulfate pulping. Redox potentials of pulping liquors measured during different sulfite and hydrosulfide cooks did not seem to parallel the dissolution of lignin and hemicellulose but were substantially lowered by the dissolved material. Comparative soda and sulfate digestions of sprucewood sawdust indicated that pretreatment with 4% sodium hydroxide at room temperature does not markedly alter the solubility of the dissolved lignin in organic solvents. On the other hand, the lignin dissolved during a sulfate digestion was considerably more soluble in 96% ethanol and less readily precipitated from ethanolacetone solution by isopropyl alcohol than was the lignin dissolved during a sodium hydroxide (soda) cook. Hence, sulfate lignin appears to have a much lower average molecular weight than does soda lignin. C.L.B.

Pulping Blue-Stained Pinewood . . .

KAYAMA, TSUTOMU. (I). Sulfate process. J. Japan Wood Research Soc. 1, no. 1: 1-5 (July, 1955). [In Japanese; English summary] Bull. Inst. Paper Chem. 28: 49.

Large volumes of Japanese red pine (*pinus densiflora*) are discolored by blue-stain fungi at the time the trees are felled and while the logs are stored in the woodyard. In order to evaluate the effects of blue staining on the pulping properties of the wood, sapwood of Japanese red pine was inoculated with pure cultures of *Ophiostoma ips*, *O. pini*, and *Leptographium* sp. and digested by the sulfate process. The blue-stained wood was higher in ash, pentosan, and lignin but lower in extractives and especially in cellulose than was the sound wood. It yielded well digested kraft pulps of comparable yield and Roe number but darker in color than did the sound wood. Hence, bleaching posed some difficulties, proportional to the degree of staining. *O. ips* gave the brightest and *O. pini* the least bright pulp. Except for folding endurance, there were no significant differences between the strength properties of stained and nonstained pulps, whether before or after bleaching. 10 tables and 3 references. C.L.B.

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Rumanian High Yield Pulps

POPPEL, E. Some data on the laboratory production of high-yield pulp by the sulfate process. Celuloza si hirtie 6, no. 7: 236-8 (July, 1957). [In Rumanian] Bull. Inst. Paper Chem. 28: 1005.

Sprucewood was pulped in a laboratory autoclave without forced circulation at 165°C. for 145-185 min., using 20-25% liquor (based on dry wood weight), followed by defibration with hot liquor in a ball mill. The pulp, obtained in 64% yield, showed physical and mechanical properties equivalent to those of ordinary (50%-yield) kraft pulps. C.L.B.

Summer Felling of Spruce

TUOVINEN, ARNO, and WARE, ILMARI. Does summer felling improve the quality of spruce pulpwood? Paperi ja Puu 40, no. 3: 103-9 (March, 1958). [In Finnish; English summary] Bull. Inst. Paper Chem. 28: 1530.

The following are the principal results obtained in experiments made in 1956-57 to determine the effect of allowing trees to lie and season as felled with tops intact (summer felling) on the quality of spruce pulpwood. The shortest useful summer-felling time is 2 weeks. Compared with conventional felling, the extent of storage rot and surface stain on the outer surface of the bolts is slightly smaller, whereas stains that penetrate the wood are equally as pronounced. It is still more favorable to use a longer summer felling time, in particular one of 2 months duration, since the surface stain and storage rot are then smaller. However, deep staining becomes more pronounced, largely because of bark beetles. Staining was observed especially in clear-cut areas. Favorable summer felling times are May, June, and July. Tannic acid damage occurs perhaps more extensively in summer-felled timber than in timber felled and barked in the usual manner, especially if the summer-felling is done in July or later. The decrease of the bast layer in summer-felled spruce is the more marked the longer the trees are allowed to lie and season with the tops intact. This fact obviously affects barking unfavorably in connection with summer felling. 12 tables. C.L.B.

Polymerization of Sulfite Pulp

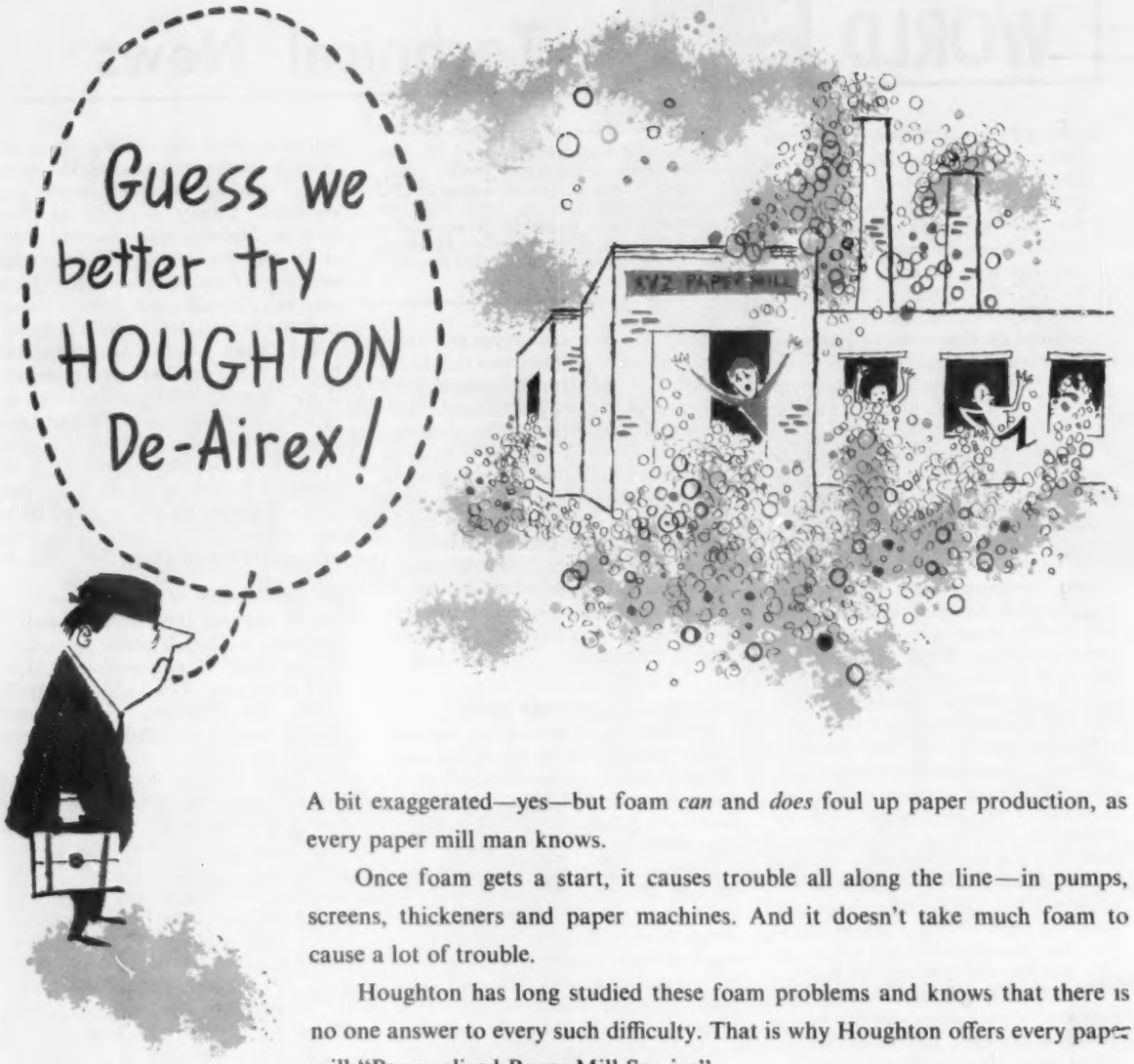
OGAIT, ALFRED. Determining the yield of spruce and beech sulfite pulps from their degree of polymerization. Das Papier 12, no. 7/8: 126-36 (April, 1958). [In German; English and French summaries] Bull. Inst. Paper Chem. 28: 1518.

Previous studies had disclosed a linear relationship between the average D.P. of unbleached spruce sulfite pulp and its bleached yield. A similar relationship, which may lend itself to routine determinations of pulp yields in the mill, was established for beech sulfite pulp, although limited to D.P. values below 1500. The precision and sources of error of yield tests based on this relationship are discussed. 5 tables, 3 figures, and 15 references. C.L.B.

Lesson from Candy Industry . . .

LIEBIG, A. WALTER. Full automatization and efficiency increase in candy-packaging and -wrapping machines. Neue Verpackung 10, no. 4: 212, 214, 216; summary: 199 (April, 1957). [In German; English summary] Bull. Inst. Paper Chem 27: 1131.

The candy industry has preceded all other industries in offering packaged products. Hence, packaging machines were existing already at the beginning of this century. Apart from product freshness and sanitation, the sales appeal of attractive wrappings contributed to the rapid development of automatic packaging lines, including multipurpose machine designs. Packaging machines for chocolate tablets, foilwrapping machines for candies and seasonal sweetgoods, high-speed biscuit wrappers, and bag-filling and -closing machines are described. 5 illustrations. C.L.B.



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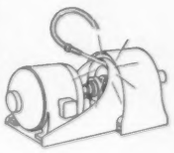

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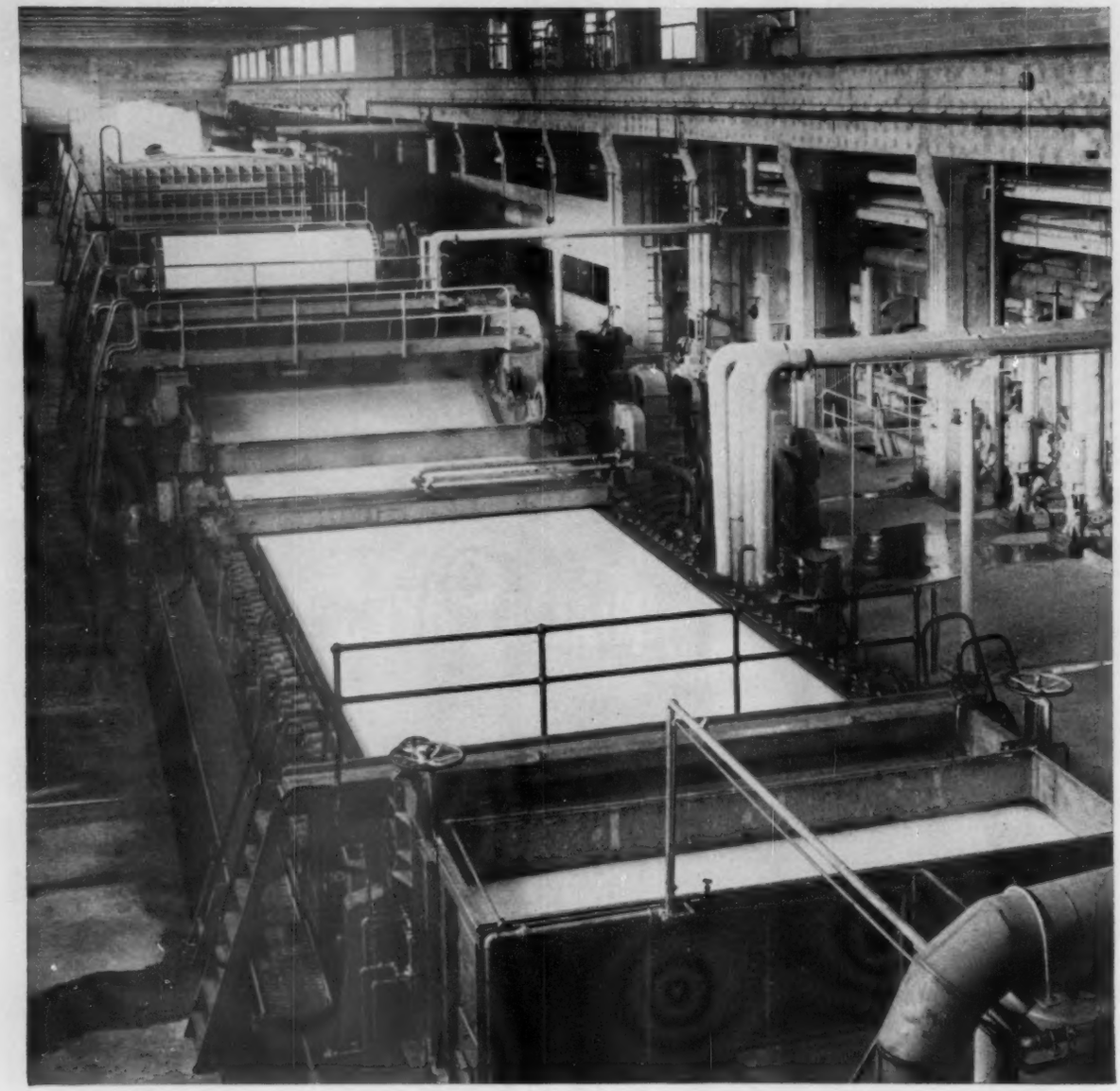

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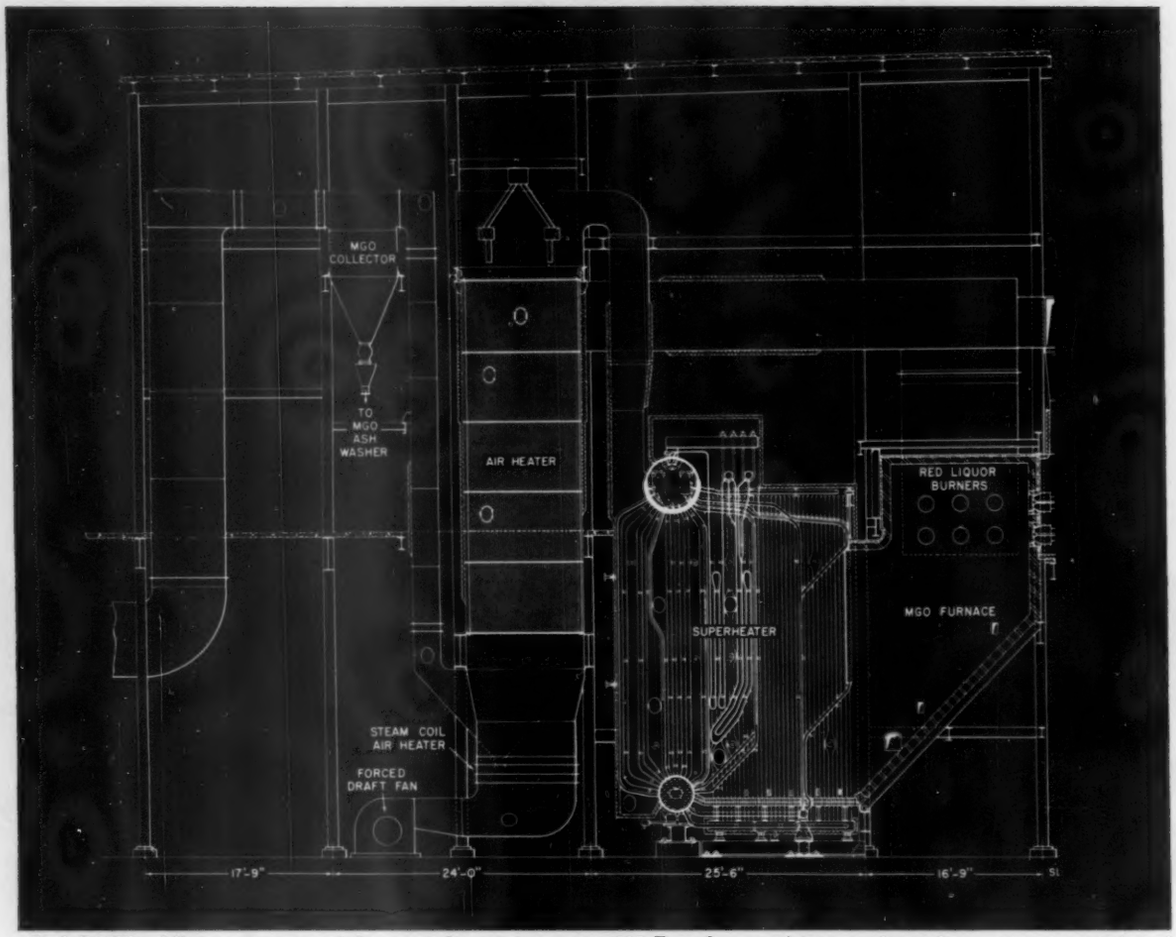

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Reduced steam costs plus low chemical makeup with this simplified recovery system have contributed to the growth of MgO pulping. Start-up of the fifth MgO pulping and recovery installation during 1959 will increase pulp production by this process to 650,000 tons per year.

Whether you're planning a new mill, or thinking in terms of conversion, it will pay you to talk to B&W about heat and chemical recovery. B&W's many years of experience in designing and manufacturing recovery equipment can help you reduce pulping costs and increase profits. Write today for further information. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y. P-816

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SEMI-CHEMICAL PULP FOR NEWSPRINT

Pioneering spirit, farsightedness and good business sense are credited for the continued success at Richmond Pulp and Paper Company, Bromptonville, Quebec. According to *Paper Trade Journal*, Richmond was the first company to use semichemical pulp to replace sulphite in newsprint and its program of continued expansion which began in 1953 is still in high gear.

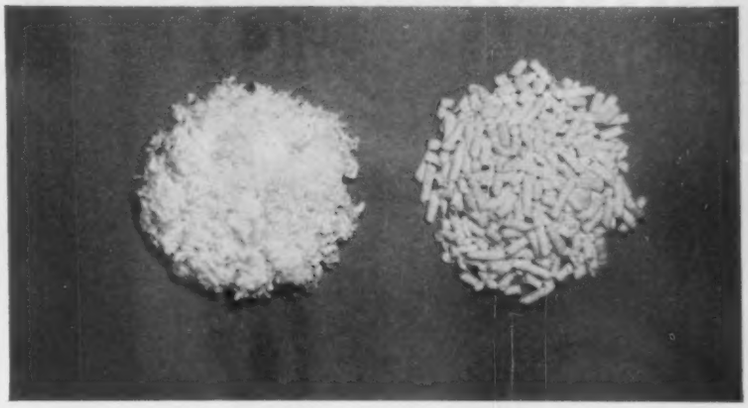
Sprout-Waldron precision refiners help keep production up and costs down. 450 hp 36-2 refiners are used to refine groundwood screen rejects so they can be reused in the system, and to refine semichemical chips to a 6 to 8% consistency at 25 tons per day.

For complete details on the Richmond Mill, ask for Reprint No. 40.

— SW —

EQUIPMENT CATALOG AVAILABLE

The availability of a 16-page illustrated catalog of pulp and paper mill equipment has been announced. Application and technical data covering precision refiners, continuous digesters, drainers, feeders, mixers, screens, fiberpresses, stock proportioners, chip fractionators, knife cutters, hammermills, saw tooth crushers, sifters, and materials handling devices are covered. Storage structures, live bottom bins, shipping containers, coolers and driers are also included. Bulletin 183 is designed to provide the user with an overall picture of the wide diversity of Sprout-Waldron products for the pulp and paper industry. Copies available on request.



Photograph of pulp before and after pelleting.

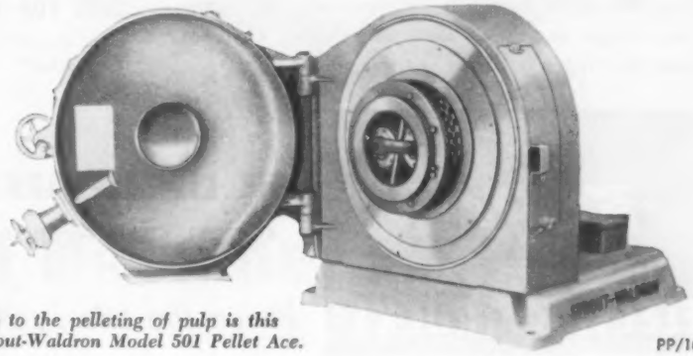
PELLETED PULP OPENS NEW HORIZONS

The successful pelleting of wood pulp and the development of a complete system for pelleting, denodulizing, drying and handling pulp pneumatically may mean tremendous savings in terms of labor, shipping and handling costs. Investigation conducted by Sprout-Waldron Pulp and Paper Division indicates the following advantages of the new system:

1. Lower capital investment.
2. Lower shipping costs.
3. Lower handling costs.
4. Greater flexibility and continuity of production.
5. Simplified storage and handling.

Tests which have been run to date indicate no adverse effect on physical properties of the pulp . . . pelleted pulps go back into solution even faster than crumb pulp.

The Sprout-Waldron system involves the use of a moisture expeller, 100 hp Sprout-Waldron Pellet Ace, Sprout-Waldron Pellet Dryer, Surge Bin and a Sprout-Waldron Pneumatic System. An analysis made for a leading eastern paper manufacturer indicates the possibility of saving more than $100,000 per year in freight alone and an equal amount in labor. Details on request.



Key to the pelleting of pulp is this Sprout-Waldron Model 501 Pellet Ace.

PP/103

ELPAR clamp truck at Great Northern Paper Company.

Twice the Life . . . 1/3rd the Operating Costs

In buying power industrial trucks, look beyond initial costs—and you'll discover these overwhelming advantages of ELPAR electric trucks:

- ELPAR electric trucks last at least twice as long as gas trucks operating under comparable conditions. Thus, when *all* initial and replacement costs are added up, ELPAR trucks actually *cost less to buy.*
- ELPAR truck operating and maintenance costs are only one-third those of comparable gas models. Based on 2,000 hours of operation, this means an average saving in direct operating costs of over *$1,200 per truck per year.*

These facts are based upon actual case studies from a number of plants. They explain why 75 of the 100 largest U. S. corporations now are using ELPAR trucks . . . and why more and more companies are converting their fleets to ELPAR electrics.

Learn how ELPAR trucks can make short work of your toughest materials handling problems —with an almost unbelievably high bonus of savings . . .

SEND FOR YOUR COPY

of the ELPAR *Lift,* "Gas vs. Electric Trucks."

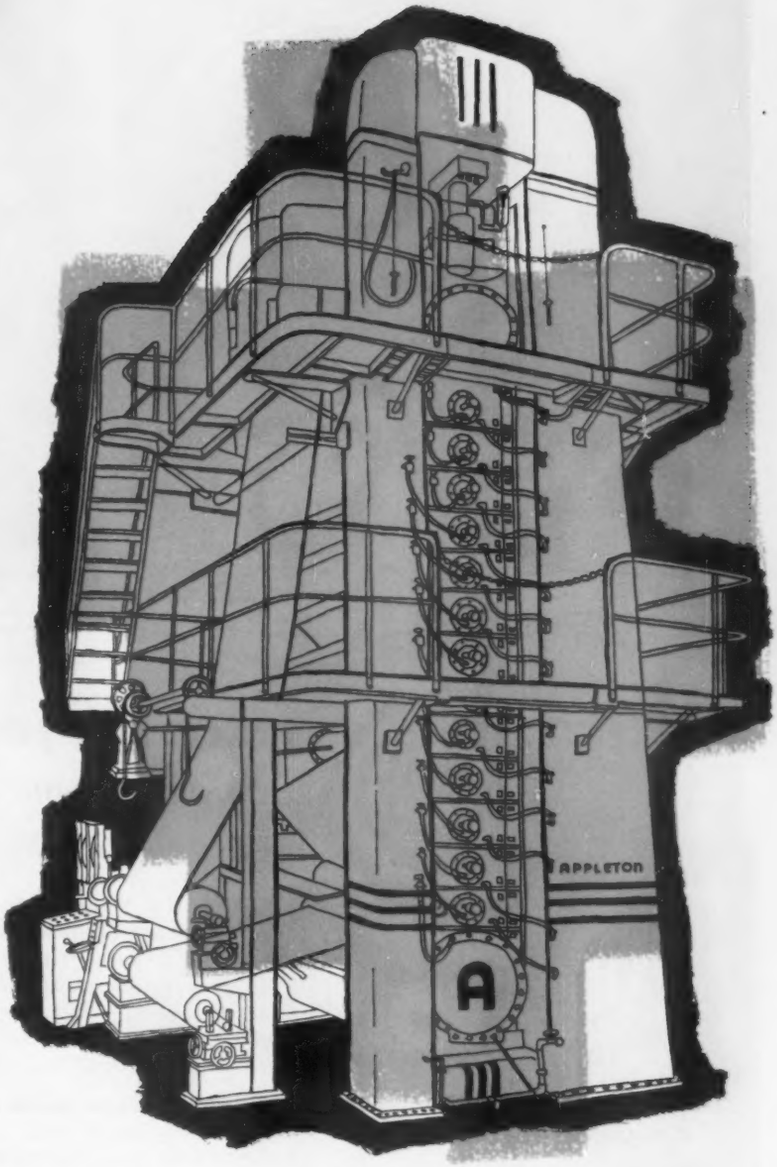
ELPAR
ELECTRIC TRUCKS

THE ELWELL-PARKER ELECTRIC COMPANY

4547 St. Clair Avenue • Cleveland 3, Ohio

Twice the Life . . . 1/3rd the Operating Costs

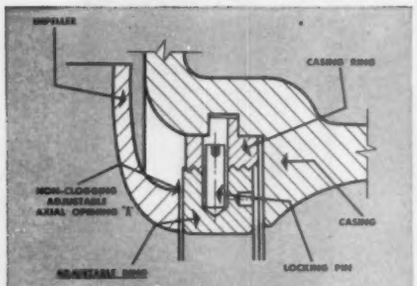
In the past 11 years, the Appleton Machine Company has built over 71% of all the supercalenders made or sold in the United States and Canada. The reason for this record is simple: *confidence* . . . confidence in Appleton's experienced design and production staff to build equipment that pays-off with profitable performance. No matter how exacting the specifications—from the largest supercalender ever erected in the United States to the highest pressure glassine stack—Appleton's touch with the tough ones is a proven fact. Write or call your Appleton representative. He has an enviable record for problem solving.



APPLETON MACHINE COMPANY
APPLETON, WISCONSIN

Eliminate pump jamming

...prolong high efficiency with adjustable wearing rings



Adjusting for Wear

All you remove is the top half casing and locking pin, then turn adjustable ring to desired clearance "A". Replace locking pin in newly drilled hole. Replace casing and pump is ready.

CONSTANTLY *right* clearances, non-clogging, and peak, lifetime efficiency are automatic when you specify adjustable wearing rings on Allis-Chalmers pumps.

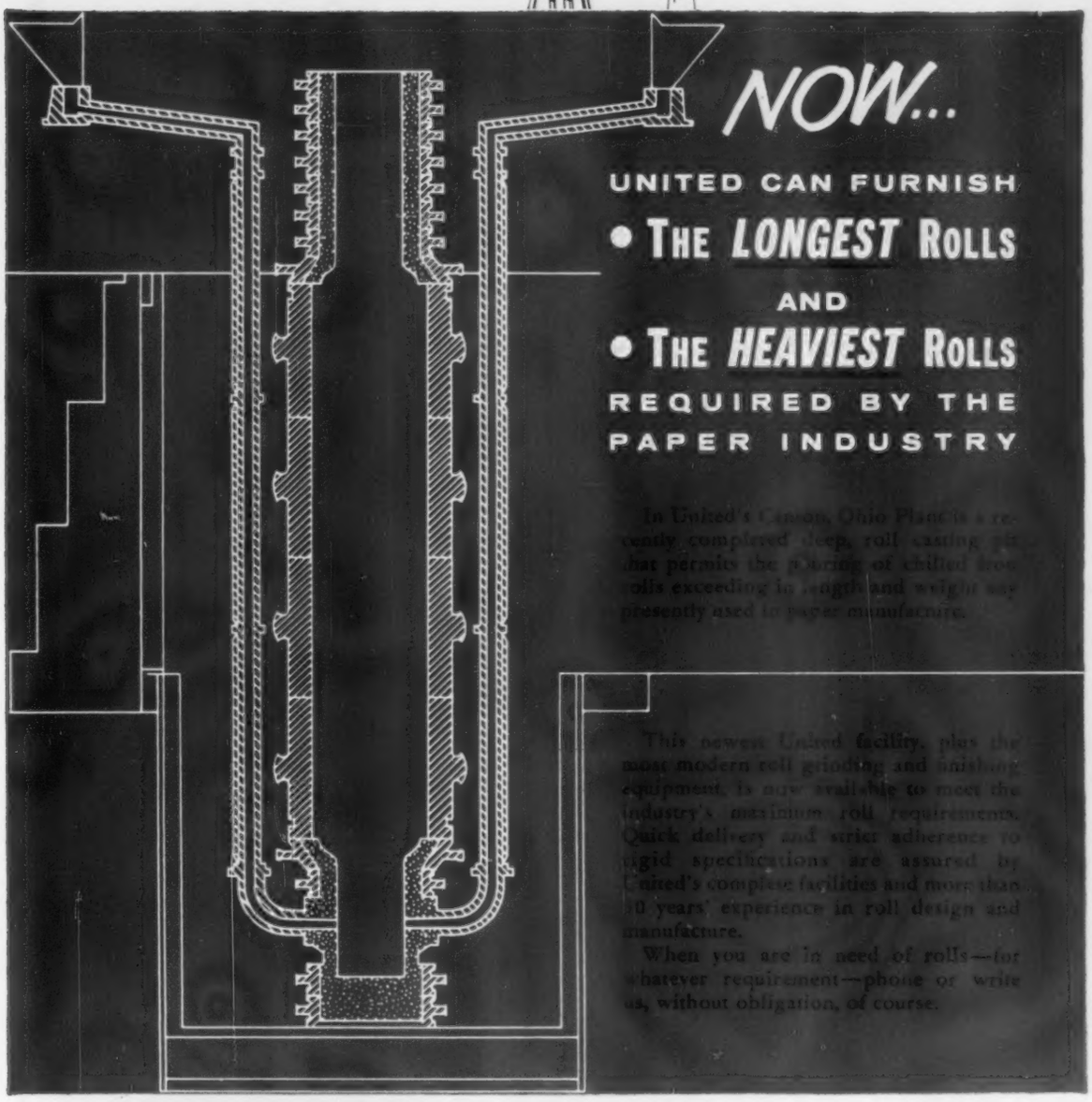
Adjustments for wearing clearance are made without disturbing rotating elements, bearings or couplings; rings don't have to be replaced every time wear occurs; you save the cost of new rings; you save maintenance time and you get constant pump service.

Allis-Chalmers pumps with adjustable wearing rings can mean real savings to you. Call your nearby A-C office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-5760

UNITED® PAPER MILL ROLLS



NOW...

UNITED CAN FURNISH

- THE *LONGEST* ROLLS

AND

- THE *HEAVIEST* ROLLS

REQUIRED BY THE PAPER INDUSTRY

In United's Canton, Ohio Plant is a recently completed deep, roll casting pit that permits the pouring of chilled iron rolls exceeding in length and weight any presently used in paper manufacture.

This newest United facility, plus the most modern roll grinding and finishing equipment, is now available to meet the industry's maximum roll requirements. Quick delivery and strict adherence to rigid specifications are assured by United's complete facilities and more than 50 years' experience in roll design and manufacture.

When you are in need of rolls—for whatever requirement—phone or write us, without obligation, of course.

UNITED ENGINEERING AND FOUNDRY COMPANY

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Plants at PITTSBURGH • VANDERGRIFT • YOUNGSTOWN • CANTON • WILMINGTON

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STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.

it's a snap

Disassemble this pump in less than 10 minutes without disturbing pipe or motor connections

Cut the "down time" for pump maintenance in your mill with this Goulds pump.

You can get at the rotating element in less than 10 minutes. The casing is split diagonally . . . with a hinged cover and jacking bolts to make disassembly easier. This construction saves your time and money by speeding repairs and inspections.

Goulds Fig. 3135 is specially designed for handling paper stock . . . as high a consistency as you can get into the impeller. The pumps are available in a wide range of special metals to resist corrosion.

Other built-in features offer you further savings that come from long life and dependable service. Fig. 3135 is described in Bulletin 723.1. Call your Goulds representative today and ask him for a copy. Or write us.

FOR INSTANCE...disassembly is as easy as this with the Fig. 3135:

Remove the bolts connecting discharge elbow and pump casing (A). To get clearance and save gasket, telescope the discharge elbow into discharge connection by a simple jacking arrangement (B).

Remove bolts connecting upper and lower halves of casing (A). Loosen top nuts (C) and raise upper half casing on hinge pin. Tightening hex nuts (D) raises casing off sideplate locks.

Attach chain fall and continue to raise casing. (On smaller sizes you can swing back the top casing half with a rod or pipe through the cored hole in casing web.)

With pump completely open, remove bearing cap, disconnect coupling and lift rotating element out. And you've not had to break any piping connections—nor move the motor.

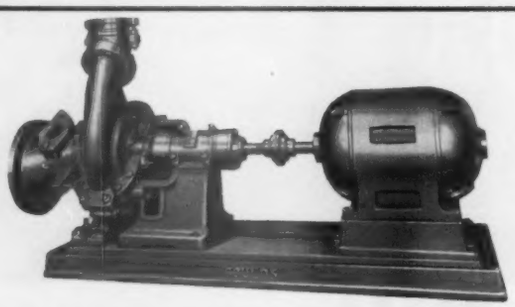

Fig. 3135 Paper Stock Pump

Capacities to 4000 GPM; heads to 215 ft.

GOULDS PUMPS, INC. • SENECA FALLS, NEW YORK

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Branches: ATLANTA, 15 Peachtree Place, N. W.; BOSTON, Room 314, 1330 Beacon Street, Brookline, Mass.; BUFFALO, 5475 Main Street; CHICAGO, 53 West Jackson Blvd.; HOUSTON, 2314 Main Street; NEW YORK CITY, Room 1503, 11 Park Place; PHILADELPHIA, 2099 North 63rd Street; PITTSBURGH, Room 512, Bessemer Bldg., 104—6th Street; TULSA, 543 East Apache Street, P. O. Box 6157.

West Coast Representative: GOULDS PUMPS Western, Inc., 1919 N. W. Thurman St., Portland 9, Oregon

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GOULDS

PUMPS FOR THE PULP AND PAPER INDUSTRY

Men who want to reduce sizing costs have Alwax* on the brain!

If you are economy-minded, here is a way to reduce your rosin size charge to the beater by 30 to 50 per cent!

Use Cyanamid's economical ALWAX or WAXINE® Size along with your rosin size. See how it improves water resistance, surface smoothness, scuffing resistance, foldability, curling resistance, ease of finishing, and even calender staining.

Cyanamid can provide you with all types and grades of wax size—and we are ready to help you with your wax-sizing problems. So, call your Cyanamid man today!

*Trademark

HELP WANTED?

ON TRIAL

Use of HE 607 permits a manufacturer to reduce wet-strength resin used by 50 per cent . . . with just as good or slightly better wet tensile strength. If you are looking for economy . . . this is it!

DYE USE CUT ONE THIRD

ACCOCEL® 741 Dispersant can be used as a mordant for basic dyes in some colored grades of bleached sulfite pulp. In one test, amount of dye was cut by one third . . . yet color depth remained the same.

STARCHED

PAREZ® Resin 613 is making a tremendous improvement in the offset papers being produced by a western company. This company is delighted with the way 613 waterproofs starch in the size press coating.

SULFATES HIGH?

Do you need a size already proved to be excellent for use with high sulfates? Ask your Cyanamid man about CYFOR® FF Size—it may be just the one you've been looking for.

RESULTS!

Whatever your paper chemicals problem, Cyanamid has the product . . . service . . . and know-how you need to solve it. Consult your Cyanamid man—he is at your service.

CLEANER MACHINE

CYANAMID

AMERICAN CYANAMID COMPANY PAPER CHEMICALS DEPARTMENT
30 Rockefeller Plaza, New York 20, N. Y.
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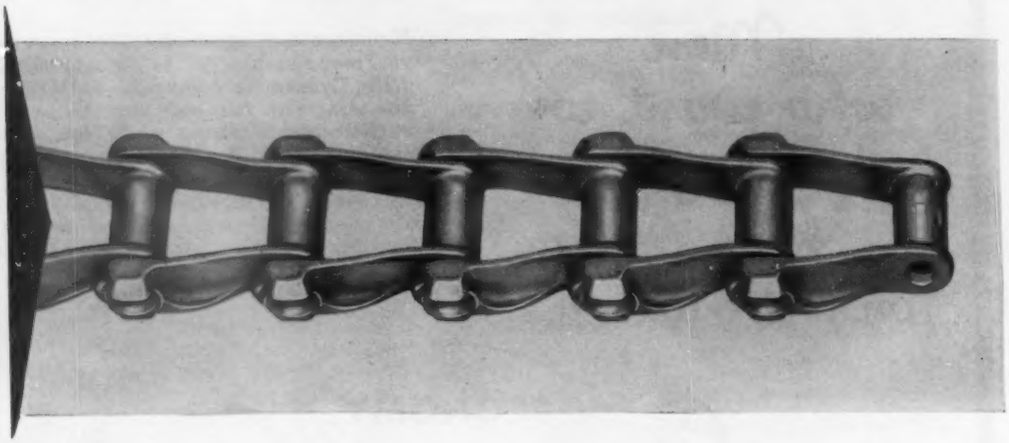
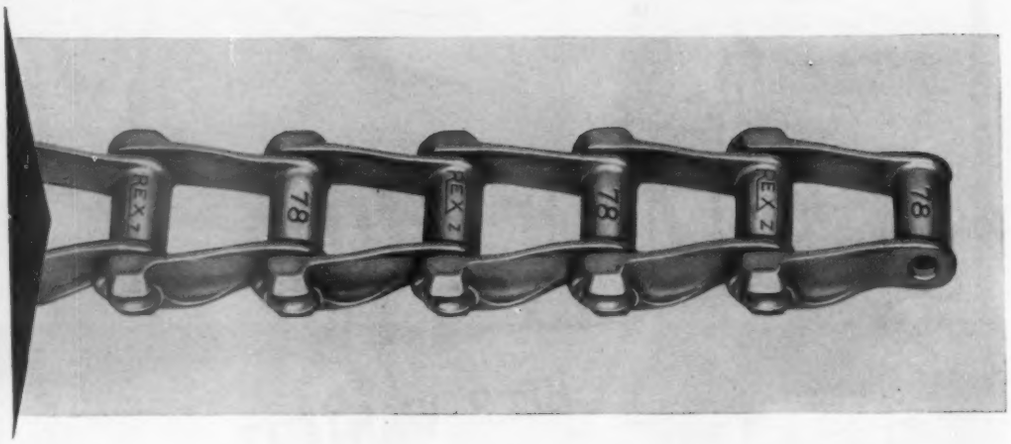
LARGEST SUPPLIER OF CHEMICALS TO THE PAPER INDUSTRY

THEY LOOK ALIKE BUT...

THIS CHAIN WILL FAIL



BEFORE REX® Z-METAL EVEN YIELDS



The chain in the lower picture is made of Rex Z-Metal, which offers a big *plus value* in extra life...extra service on your conveyors. The best grade of malleable iron chain will *fail* before Rex Z-Metal Chain even reaches its yield point. The table below clearly illustrates the superiority of Z-Metal for mill service.

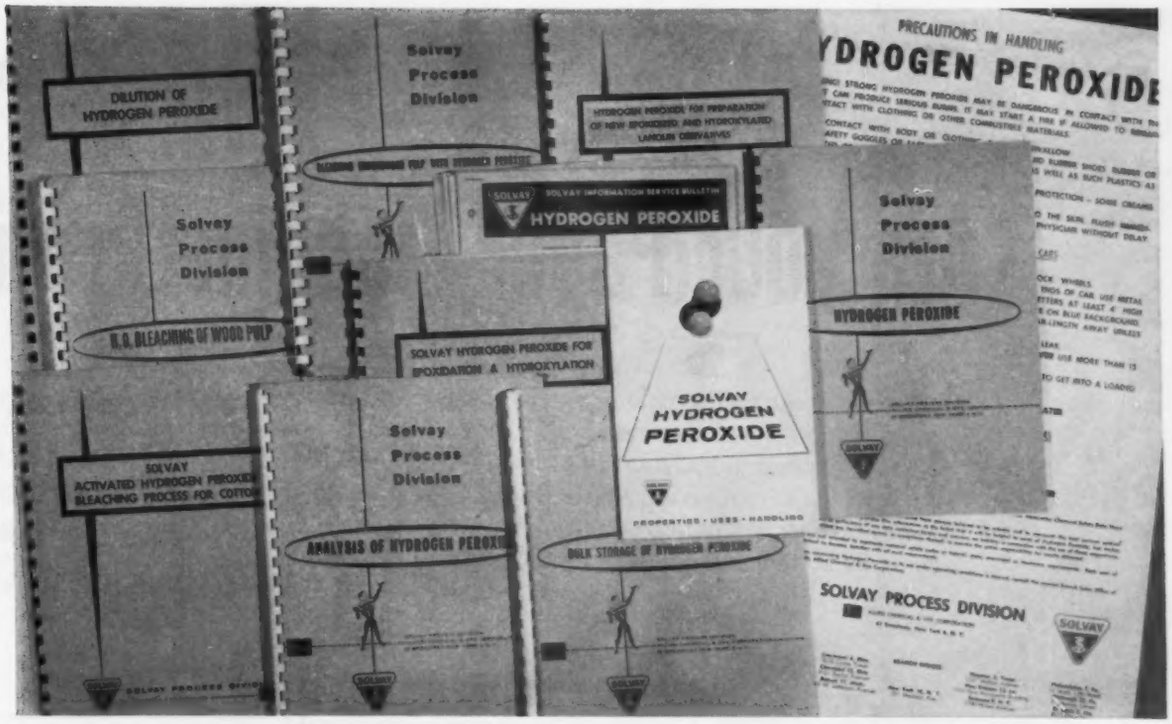
These are facts proved not only in exhaustive laboratory tests but in actual operation in mill after mill. Rex Z-Metal Chains frequently outlast malleable chains *2 to 4 times.* Remember, Rex Z-Metal resists corrosion and abrasion... important reasons why it delivers so much more service life.

For longer chain life...for greater strength, you need Rex Z-Metal Chains. Write for your copy of Bulletin No. 56-56. CHAIN Belt Co., 4691 W. Greenfield Ave., Milwaukee 1, Wis.

Average Comparative Mechanical Properties (Standard Test Bars)

	Ultimate Strength, Lb. per Sq. In.	Yield Point, Lb. per Sq. In.
Malleable Iron	53,000	35,000
REX Z-METAL	75,000	55,000

CHAIN BELT



AVAILABLE TO YOU – TECHNICAL DATA ON SOLVAY HYDROGEN PEROXIDE

To help you in your current operations—here is authoritative information on the analysis, uses, handling and storage of SOLVAY Hydrogen Peroxide. These booklets, bulletins and the wall precaution chart have been compiled from accepted sources, from SOLVAY's own research and from 77 years of field experience with chemical consumers in virtually every industrial category. Check the contents of the individual items—then check those that may be helpful to you on the coupon and mail.

HP-1—Solvay Hydrogen Peroxide: Physical properties, chemical reactions, shipping containers, handling, storage. 21 pages.

HP-2—Wall Chart: Precautions for handling hydrogen peroxide.

HP-6—Hydrogen Peroxide Bleaching of Wood Pulp: Applications and methods. 28 pages.

HP-7—Hydrogen Peroxide Bleaching of Groundwood Pulp: Chemicals used, analytical methods, bleaching operations. 15 pages.

HP-9—Hydrogen Peroxide Bulk Storage: Bulk shipping and storage equipment, equipment suppliers. 13 pages.

HP-10—Analysis of Hydrogen Peroxide: Analytical methods, reagents, indicators, standard solutions. 31 pages.

HP-13—Solvay Hydrogen Peroxide for Epoxidation & Hydroxylation: Up-to-date review and bibliography, methods, olefins used, present and potential uses of products. 8 pages.

HP-14—Solvay Activated Hydrogen Peroxide Bleaching Process for Cotton: Process description, operation details, commercial applications, cost and quality comparison. 7 pages.

HP-15—Dilution of Hydrogen Peroxide: How to dilute accurately, equipment and materials needed. 9 pages.

Sodium Nitrite • Calcium Chloride • Chlorine • Caustic Soda • Caustic Potash Chloroform • Potassium Carbonate • Sodium Bicarbonate • Vinyl Chloride • Methyl Chloride • Ammonium Chloride • Methylene Chloride • Monochlorobenzene Soda Ash • Para-dichlorobenzene • Ortho-dichlorobenzene • Carbon Tetrachloride Ammonium Bicarbonate • Snowflake® Crystals • Aluminum Chloride • Cleaning Compounds • Hydrogen Peroxide • Mutual Chromium Chemicals

HP-16—Hydrogen Peroxide: Up-to-date review of properties, stabilization, manufacturing methods, purification and concentration (prepared on request for new issue of Encyclopedia of Chemical Technology). 20 pages.

HP-17—Hydrogen Peroxide for Preparation of New Epoxidized and Hydroxylated Lanolin Derivatives: Study of preparation methods and determination of reaction products' characteristics. 8 pages.

NO. 1-56—Information Service Bulletin: Directions and equipment for emptying drums of hydrogen peroxide.

NO. 8-1057—Information Service Bulletin: Directions for unloading tank cars of hydrogen peroxide.

NO. 6-56—Information Service Bulletin: Hydrogen peroxide in oxidation of vat dyes.

NO. 2-57—Information Service Bulletin: Hydrogen peroxide in finishing electroplated surfaces.

NO. 6-657—Information Service Bulletin: Hydrogen peroxide in foam rubber manufacture.

NO. 4-57—Information Service Bulletin: Hydrogen peroxide in shellac bleaching.

NO. 7-957 and NO. 9-1157—Information Service Bulletins: Hydrogen peroxide in wood bleaching.

Allied Chemical

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N. Y.

SOLVAY branch offices and dealers are located in major centers from coast to coast.

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N.Y.

Please send me without cost the following SOLVAY Hydrogen Peroxide material:

☐ HP-1	☐ HP-2	☐ HP-6	☐ HP-7
☐ HP-9	☐ HP-10	☐ HP-13	☐ HP-14
☐ HP-15	☐ HP-16	☐ HP-17	☐ NO. 1-56
☐ NO. 8-1057	☐ NO. 6-56	☐ NO. 2-57	☐ NO. 6-657
		☐ NO. 4-57	☐ NO. 7-957

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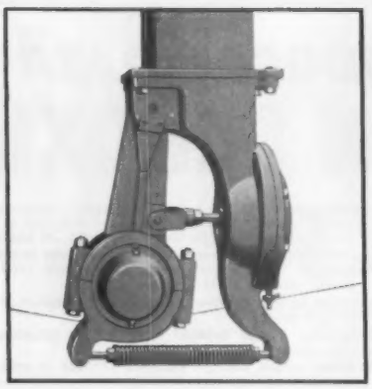
BELOIT UNIT MODERNIZATION

Are your Paper Machine Profits

MODERNIZATION
WITH PROVED BELOIT UNITS
...CUTS COSTS
...INCREASES SPEED
...IMPROVES QUALITY



Wires running off periodically?

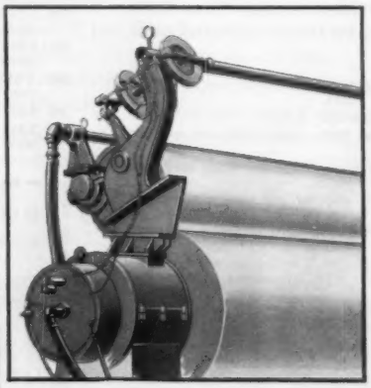
Obsolete wire guides can cut mercilessly into your paper-machine profits. Why not modernize with a low-cost Beloit automatic wire guide now? The patented Beloit air diaphragm guide moves the guide roll smoothly, efficiently. Its rate of response is independent of wire speed; wire edge damage is avoided through the use of a floating paddle. The entire mechanism is simple, foolproof, rugged—no small parts subject to easy damage. Models available for every type and size Fourdrinier.

Lumpbreaker roll problems?

A Beloit lumpbreaker roll can solve your problems. Beloit design supplies true loading with proper relationship to the couch suction box. Consider these important features:

- Air-diaphragm loading and lifting
- Remote control
- Motor driven
- Fully adjustable mountings
- Rugged body with thick, soft rubber cover

Mills report that the addition of a Beloit lumpbreaker roll results in marked improvement in machine efficiency and drying.



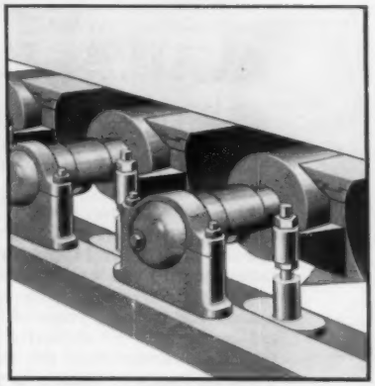
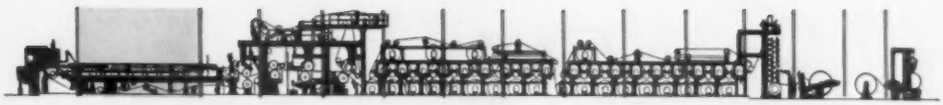


Table rolls bouncing?

Modernize with Beloit table rolls! Adequately sized precision balanced table rolls are a necessity if optimum sheet formation is to be achieved. Beloit gives full attention to detail: roll bodies are made to order, straightened, carefully machined, and balanced on precision equipment. Result: a table roll that will give outstanding performance. Beloit features table roll covers of micarta, rubber, composition, and brass—with special grooving available for reduced drainage rates.

BELOIT UNITS FOR FOURDRINIERS: SUCTION COUCH ROLLS • DANDY ROLL ASSEMBLIES
WIRE ROLL DOCTORS • WIRE TENSION ASSEMBLIES • STAINLESS STEEL
SAVEALLS • BREAST ROLLS • SHOWERS AND SQUIRTS



ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS

tied to an OBSOLETE Fourdrinier?

Modernize your Fourdrinier with proved Beloit units. Here are components for the Fourdrinier section of your paper machine which have proved to be of special value in increasing speeds, improving paper qualities, reducing machine downtime, and cutting maintenance costs. Beloit also builds complete Fourdriniers of every type: stationary, cantilever, pit stringing removable, aisle stringing removable.

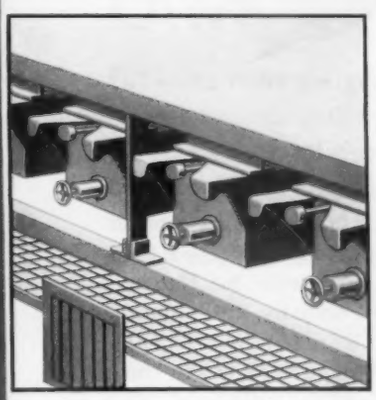
Let a Beloit sales engineer show you the best Fourdrinier design for your machine. Sheet quality improvements can be great —the cost small.

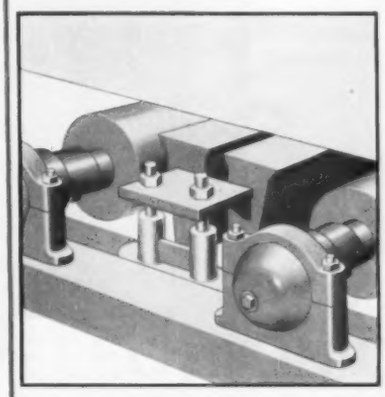
Suction boxes chattering?

Check these important features built into every new Beloit suction box:

- Stainless steel construction with effective reinforcing
- Internal construction that makes cleaning easy
- Full area discharge
- Box hangers for automatic height compensation
- Tried and proved suction box oscillators

A complete range of suction box covers is available.



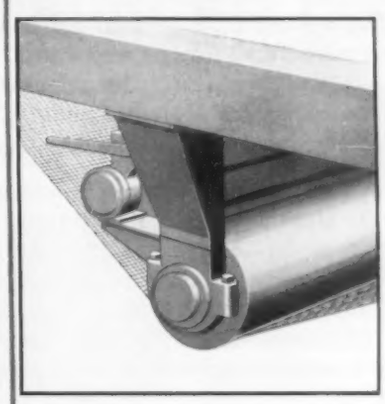


Wire drainage problems?

Beloit builds a complete line of forming boards and deflectors—designed to promote natural drainage and assure uniform formation. Forming boards are available in several types, incorporating convenient adjustments to permit accurate alignment with wire configuration. Single and multiple strip deflectors are available for specific application to every grade, speed, and machine width. Forming boards and deflector bodies are extra-heavy-duty stainless steel fabrications, especially machined to compensate for deflection.

Wire rolls thin and bouncing?

Wire rolls *must* be strong to reduce deflection—must have smooth surfaces for effective doctoring—must turn freely to avoid wire wear. Beloit-designed wire rolls with special antifriction bearings provide all three features. Newly designed bearing assemblies exclude water and retain grease more effectively than ever before.... Rugged Beloit wire rolls are available with rubber, monel, composition, or brass covers.



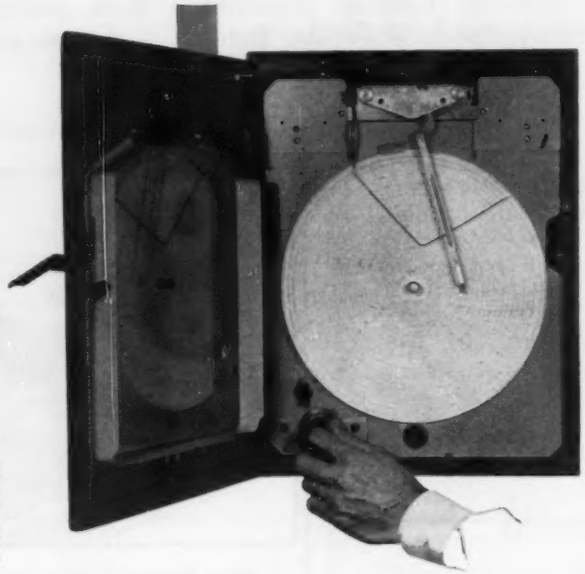
» **ACT!** *Write for facts —or ask a Beloit Sales Engineer. Beloit Iron Works, Beloit, Wis.*

BELOIT IRON WORKS · PAPER MACHINERY · BELOIT, WIS., U.S.A. · 100 YEARS 1858 - 1958

BELOIT
PAPER MACHINERY

your partner in papermaking

NEW FLEXIBILITY IN OBSTRUCTIONLESS FLOWMETERING



The F & P Magnetic Flowmeter design lets you set any desired flow value *at full scale* . . . permits *utilization of the full receiver range.* Maximum flow can be set at any value from 1 foot per second to 30 feet per second . . . *at the turn of a dial!* This unique feature *is standard with every F & P Magnetic Flowmeter.* There's no extra charge, no complicated modifications.

Available in pipe sizes from ½″ and up, these flowmeters—plus the new F & P potentiometer-type indicator/recorder—comprise a metering system which permits interchangeability of any primary with any indicator/recorder. All types of standard secondary instrumentation—integration, control, retransmission—can be supplied in the recorder case.

You'll find that it's easy to substitute F & P Magnetic Flowmeters directly in existing flow-control or ratio-control systems. Get in touch with the F & P field engineer nearest you, and write for Catalog 10D1416. Fischer & Porter Company, 2918 County Line Road, Hatboro, Pa. In Canada, write Fischer & Porter (Canada) Ltd., 2700 Jane St., Toronto, Ont.

FISCHER & PORTER CO.

Complete Process Instrumentation

Easy-to-set electronic signals - .002" spacing accuracy

LAWSON ELECTRONIC SPACER CUTTERS

Eliminate hand gauging. The Lawson Electronic Spacer automatically positions each cut to within .002". Easy-to-set signals slide quickly into place. No physical contacts . . . electronic accuracy is not affected by dirt, dust, rust or humidity. Six sided spacer bar permits almost unlimited cutting combinations . . . green light signals operator to make cut. Set repeat jobs on plastic strips, file away until needed.

Increase production. The Lawson Electronic Spacer paces your operator to new production highs. Truly cushioned hydraulic clamping and fast, straightline knife action combine to give a ripple-free cut edge on lifts to 6½" high. Unmatched for accuracy, production and easy operation, the Lawson Electronic Spacer Cutter is sized to suit your needs—39" through 69". Write for full details today.

THE LAWSON COMPANY

Division of Miehle-Goss-Dexter, Inc. / Pearl River, New York / Offices in principal cities

TOM BIGBEE SAYS:

"Gauges eliminate guesswork in quality control of Naheola pulp!"

"Yes, sir—you're about as close as you can get to foolproof quality control here in this new Marathon pulp mill at Naheola.

"Talk about precision instruments and controls—man, there are 23 different control panels (located in strategic spots to prevent any loss of motion) and there are more than 300 automatic control devices plus more than 200,000 feet of transmission tubing, to speed production and control quality. Why, even the treatment of waste materials from the pulp-making operation is remotely controlled from a panel in the mill laboratory.

"You should see this instrumentation in action. I saw the 'start-up' last month and these first experimental runs have everyone excited. The success of the very first runs surely proved that gauges eliminate guesswork!

"Of course, even though we're excited, we're not really surprised—not with the experience the Marathon people have at their disposal. When you combine their store of pulp-making knowledge with the modern equipment they have here in Naheola you're bound to get quality pulp—there is no guesswork about that!"

MARATHON SOUTHERN CORPORATION

NAHEOLA, ALABAMA. A Subsidiary of:

MARATHON

A Division of American Can Company

MENASHA, WISCONSIN

Now Penton's* Miracle Characteristics are put to use in Diaphragm Valves!

Hills-McCanna's Exclusive New Lining Meets Many of the Service Requirements That Once Called For Stainless Steel and Glass!

By: R. McFarland,
Technical Director,
Hills-McCanna Company

Here at Hills-McCanna an exhaustive search has paid off: a new lining material for diaphragm valves matches the economies of rubber lining while meeting many of the service requirements of glass lining and stainless steel.

A new Penton plastic-lined valve body (pictured below) has been developed, tested and readied for the specialized needs of the processing industries.

A six inch and three quarter inch Penton lined valve body

Because of its wide versatility, we believe a brief rundown on the new product's unusual characteristics and its ability to cope with diverse chemical service applications will be of interest to you.

Economically, the Penton plastic-lined valve stands alone. Competitively priced with rubber-lined valves, it meets every requirement placed on the hard rubber-lined types. This versatile valve has the ability to meet many of the service requirements that once called for the higher-priced stainless steel and glass-lined valves.

Performance-wise, Penton (a chlorinated polyether polymer), a product of Hercules Powder Company, affords an excellent combination of temperature resistance, chemical resistance and exceptional dimensional stability. *Penton is durable:* it takes up to 300°F without losing its ability to withstand corrosion. Also, it is absolutely non-contaminating; cannot affect a product's taste, aroma or color.

The design features of the Hills-McCanna valve body make it possible to take advantage of the excellent properties of the Penton lining. Chemically resistant Penton lining, in an armored body of cast iron or aluminum, offers the most universally adaptable processing valve available today. It handles *more* substances . . . and works equally well with metallic, plastic, glass and lined piping.

Above is a complete handwheel operated Diaphragm Valve with Penton lined body

Penton lined diaphragm valves are available in sizes ½" thru 6" with flanged ends, and diaphragm valves with solid Penton bodies are available in sizes ½" thru 2" with screwed ends.

As with all Hills-McCanna diaphragm valves, the valve is of packless construction. Its working parts are isolated from flow, and are easily accessible for simple in-line maintenance.

To introduce this valve—and to give you the opportunity of noting the properties of Penton—we have prepared a concise Technical Information Bulletin, No. 114. It contains more than 250 of the more common chemical services, temperature and pressure specifications, and elaborates on the typical services in which Penton lined valves can be used.

Supplementing the booklet is the Penton "Dollar." An immersion disc of solid Penton, it can be used to demonstrate its unusual chemical and temperature resistance characteristics. Let the Penton "Dollar" show you how you can save dollars with the use of Hills-McCanna Penton lined valves in your plant. Both Bulletin and "Dollar" are available via letterhead request. Write: *Hills-McCanna Company,* H624 *W. Touhy Avenue, Chicago 46, Illinois.*

*Penton is a registered trade name of Hercules Powder Company

In developing THERMOBESTOS Insulation

Not damaged by water. Thermobestos has the moisture resistance outdoor service demands. Soak it in water for one day or 365—and you can still walk on it without damage. Dry it out and Thermobestos is as good as new, with conductivity and structural strength unimpaired.

Low Conductivity. The low thermal conductivity of Thermobestos is best demonstrated in actual service where it makes possible accurate, uniform temperature control, helps reduce fuel costs and contributes materially to operating efficiency.

Johns-Manville

for outdoor process industry applications

research scientists didn't stop top insulating effectiveness...

They added the three physical properties you most wanted—
HIGH STRENGTH—LIGHT WEIGHT —MOISTURE RESISTANCE!

Thermobestos® offers the lowest k factor of all insulations in general use throughout the process industries. For maximum heat control on outdoor piping and equipment operating at temperatures to 1200F it just can't be beat!

Yet top insulating effectiveness is only one reason why more and more engineers are specifying Thermobestos for refineries, chemical plants, and wherever hot outdoor vessels and piping must be insulated. For Thermobestos also offers a threefold bonus . . .

. . . Three outstanding physical properties

Thermobestos is 1) strong and rigid. Its hard composition resists crushing and easily withstands unusual service abuse. Yet it is 2) lightweight for easy handling and fast application. And it is 3) highly moisture resistant, remains undamaged even by prolonged wetting.

Quickly, easily applied

Thermobestos is made from hydrous calcium silicate . . . molded to size for proper fit. Its high strength makes it particularly adaptable for time-saving shop prefabrication of fittings and bends.

Furnished in large sections, Thermobestos is easy to apply. It reduces the number of joints. In pipe insulation form, it comes in a complete selection of sizes up to 30″ O. D. Also available in 6″ x 36″ and 12″ x 36″ blocks in a full range of thicknesses.

For further information write for your free copy of the 12-page Thermobestos booklet, IN-169A. Address Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

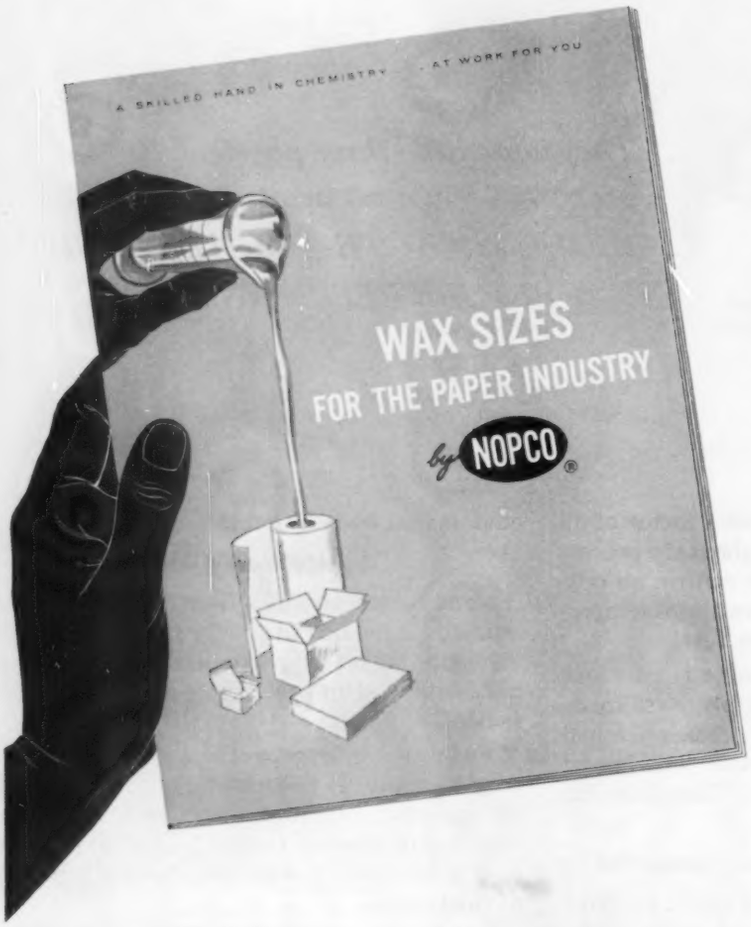
INSULATIONS FOR LASTING THERMAL EFFICIENCY
MATERIALS · ENGINEERING · APPLICATION

JOHNS-MANVILLE JM PRODUCTS

For any size problem

NOPCO WAX SIZES

are your best answer



Whatever type of paper, paperboard or fiberboard you produce, your sizing problems can be lessened by use of a Nopco-developed wax size.

Nopco wax sizes—the result of long and tireless research—assure positive wax retention on the fibers, thorough and even wax distribution through the sheet, high efficiency at low cost. As many as 21 different formulations are available to give your product any combination of properties needed.

For complete information about Nopco wax sizes, write for your copy of "Wax Sizes for the Paper Industry." Nopco Chemical Company, 60 Park Place, Newark, N.J.

NOPCO®

VITAL INGREDIENTS FOR VITAL INDUSTRIES

Plants: Harrison, N.J. • Richmond, Calif. • Cedartown, Ga. • London, Canada

Reliable Roll Coverings Open The Door To Savings in Mill Operations

Griffith roll coverings combine long service life with superior performance. A leader in the field since 1911, Griffith Rubber Mills covers all types of rubber rolls for the pulp & paper mill industry. Modern equipment and experienced craftsmen speed the job from preparation of the core through covering and final balancing. Continuous inspections and laboratory controls assure unvarying high quality. Griffith "firsts" include these special roll coverings:

Griffith "SDT" (Self-Doctoring Topress®)

Internationally famous roll that gives better water removal at high speeds and increased felt life. The SDT roll eliminates picking of the sheet and keeps breaks in the sheet to a minimum. In many installations doctor blades can be eliminated with the SDT roll.

Griffith "HI-TEMP"

Amazing heat & pressure resistant roll that does not check or corrugate and has no measurable compression at pressures to 1,000 lbs./lineal inch . . . no softening at temperatures to 300° F. Impervious to all types of size, waxes and most acid materials used by the pulp & paper industry.

Griffith "TRED-ROC"

Stone-hard roll covering for the wire position on high speed paper machines. Its extremely hard, glossy surface virtually eliminates wire drag. Superior abrasion resistance stops grooving and assures long life.

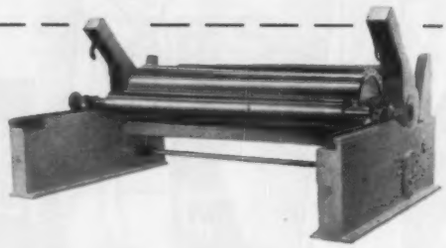
REDUCE COSTLY "DOWN" TIME BY SPECIFYING GRIFFITH RUBBER COVERED ROLLS

Griffith® RUBBER MILLS

GENERAL OFFICE • 2439 N. W. 22nd AVENUE • PORTLAND 10, OREGON • U.S.A.

Manchester Machines

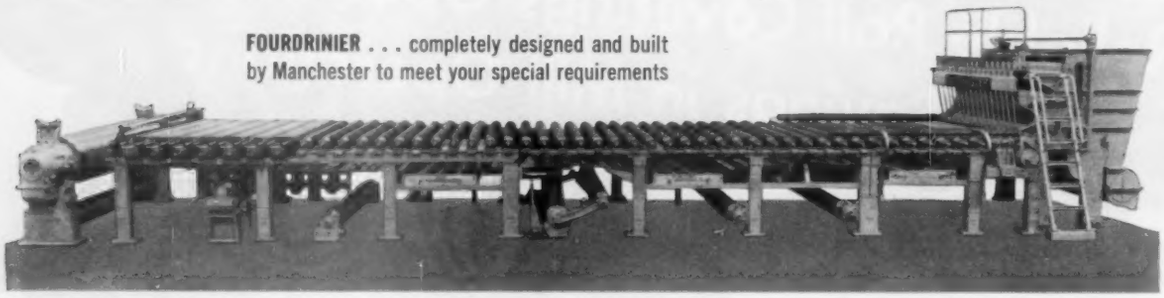
CANTILEVER SUCTION COUCH ROLL . . .
for more efficient water removal



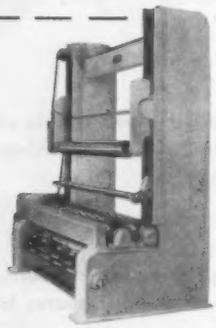
UNIFORM SPEED REEL . . . for tight rolls every run

produce better paper

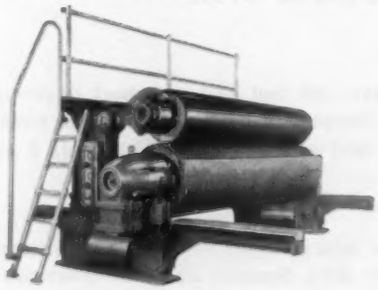
FOURDRINIER . . . completely designed and built by Manchester to meet your special requirements



AT LOWER COST



WINDER AND SLITTER . . .
for uniformly wound straight rolls



SUCTION PRESS . . .
for a higher drying rate

THE MANCHESTER MACHINE COMPANY

MIDDLETOWN, OHIO

SPECIALISTS IN DESIGNING AND BUILDING PAPER MILL MACHINERY

FINEST LETTERHEADS...

begin with Glidden Zopaque® Titanium Dioxide

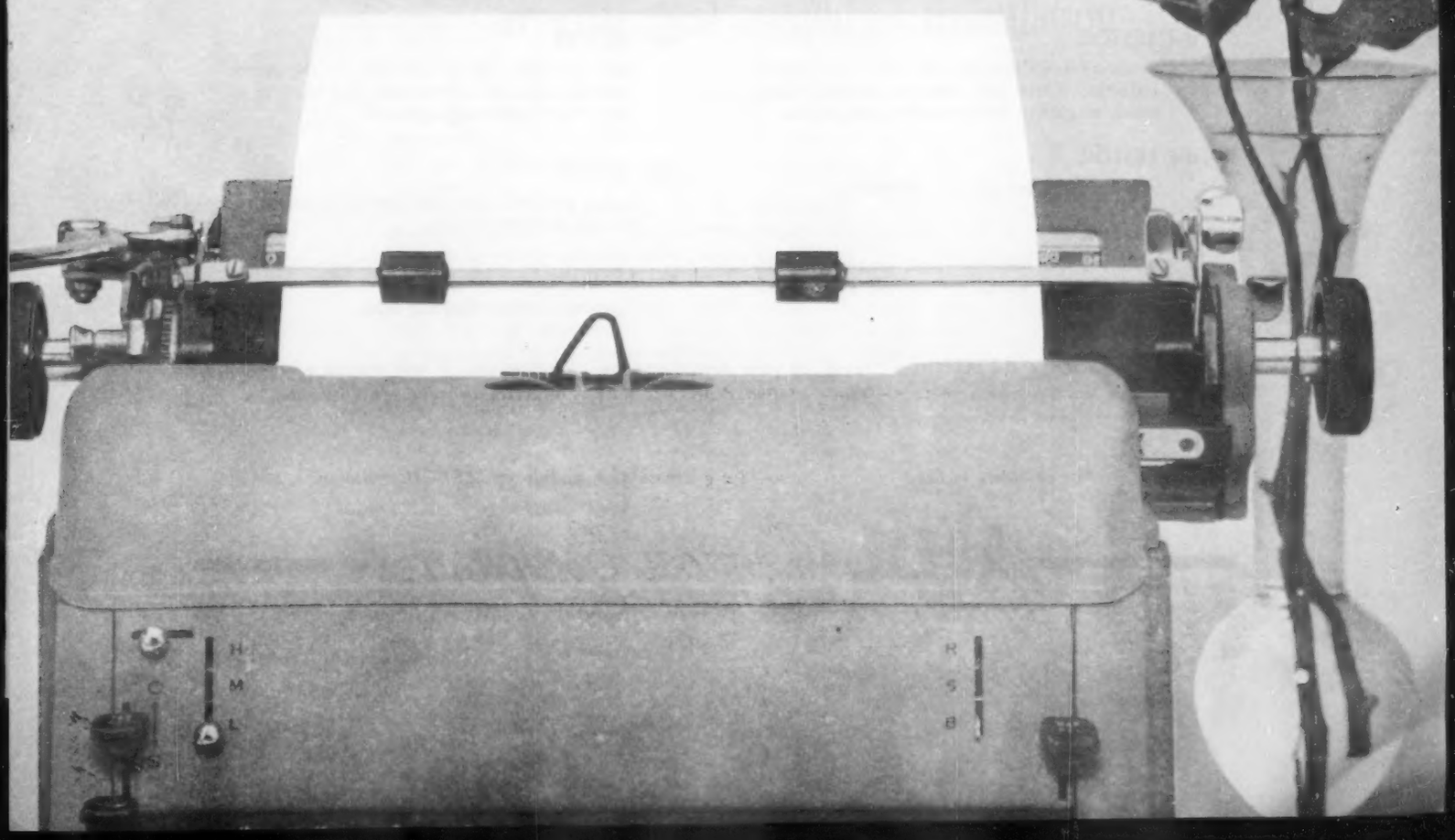
Letterheads that make the most favorable business impressions need the look and feel of quality made possible by the use of Glidden Zopaque Titanium Dioxide. Zopaque imparts high opacity, greater whiteness and brightness, and minimizes show-through. The outstanding dispersion characteristics of Zopaque assure smoother paper surfaces.

Write for full facts on the many advantages of using Glidden Zopaque Titanium Dioxide for the manufacture of business letterheads and other fine quality paper products. Zopaque is available in various grades specially developed for coatings and beater addition.

QUALITY Glidden PRODUCTS

FINEST PIGMENTS FOR INDUSTRY

The Glidden Company
Chemicals—Pigments—Metals Division
Baltimore 26, Maryland

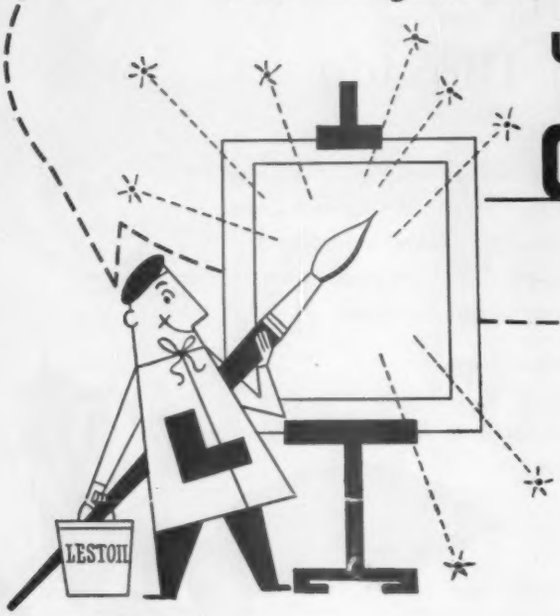


for unexcelled uniformity of color and brightness in finished paper...

USE

d-i LESTOIL

LIQUID DETERGENT



Consistently high standards are maintained from stock processed with d-i LESTOIL liquid detergent.

d-i LESTOIL combines in one product thorough wetting, penetrating, solvent, emulsifying, and dispersing properties which assure complete soil removal from all types of furnish. No new equipment is necessary — d-i LESTOIL does a thorough job in rotary boiler, beater, hydropulper, washer, or head box — wherever cleansing of raw stock is a problem.

d-i LESTOIL
dissolves and disperses ink, wax, oils, asphalt coatings, fillers and other impurities from news, magazine, ledger and mixed papers.

d-i LESTOIL
aids in rapid and effective defibering.

d-i LESTOIL
dissolves and disperses wax, grease, and oils in rags, rope stock, cotton mill sweeps and cotton linters.

d-i LESTOIL
keeps washers, wires and felts — the entire system — CLEAN. Tackiness and sticking at the press or drier is prevented.

d-i LESTOIL
makes possible economical performance by reducing shut-down time.

d-i LESTOIL
is unexcelled for washing felts.

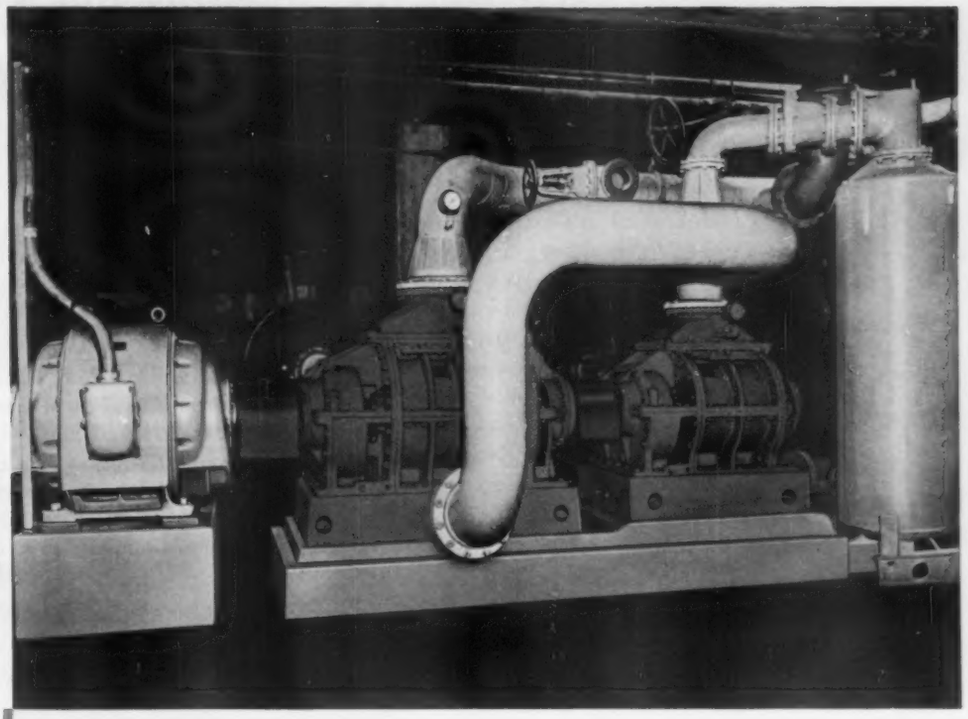
Make d-i LESTOIL a "must" in your manufacturing specifications. It will assure you of trouble-free processes — and a finished product that is uniform in color and brightness, and is completely soil free.

For complete technical information and a generous free sample of LESTOIL write to:

ADELL *Chemical Company*

HOLYOKE, MASSACHUSETTS

FOR INTERNATIONAL PAPER COMPANY



Equipment purchased for this installation Two RCV-2 vacuum pumps—16x35 and 14x24 in compound arrangement, rated 7740 cfm at 22" Hg vacuum, operating at 900 RPM with 294 HP.

NEW R-C compound vacuum pump arrangement simplifies installation

With a new "straight-through" drive design for compound vacuum pump applications, Roots-Connersville has not only simplified piping arrangements but has also further reduced installation time and costs. This new development features a drive-through arrangement with the second stage pump driven directly from a shaft extension on the first stage pump. This permits the use of a standard single shaft extension motor drive. Other pump improvements provide for operation at higher speeds giving more CFM per dollar.

In addition to simplifying installation of the piping, this arrangement provides for easier servicing and maintenance of both pumps and motor. The first installation of this new arrangement was made at the Southern Kraft Division of International Paper Co. Subsequent installations have further substantiated its advantages.

Here is another reason why you can depend on Roots-Connersville vacuum pumps to deliver the finest overall performance and dependability at low cost . . . a reputation proved for generations in the country's leading paper mills.

For additional data, please refer to our section in **Chemical Engineering Catalog** or write for **Bulletin VP-158**

ROOTS-CONNERSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.

958 Willow Avenue, Connersville, Indiana. In Canada – 629 Adelaide St., W., Toronto, Ont.

Republic ELECTRUNITE "Dekoron-Coated" E. M. T. resists corrosion...outlasts standard conduit 10 to 1

AT CHARMIN PAPER PRODUCTS COMPANY, GREEN BAY, WISCONSIN

Here's another typical example that proves... the *best* costs *less* installed!

Republic ELECTRUNITE® "Dekoron®-Coated" E.M.T. has actually outlasted standard conduit ten to one in the highly corrosive atmospheres of paper making at the Charmin Paper Products Company, Green Bay, Wisconsin.

At one time, sulfurous acid fumes from the mill's sulfite digester combined with moisture to corrode standard conduit so badly that it had to be renewed as often as every six months. Republic's "Dekoron-Coated" ELECTRUNITE E.M.T. was used to replace standard conduit.

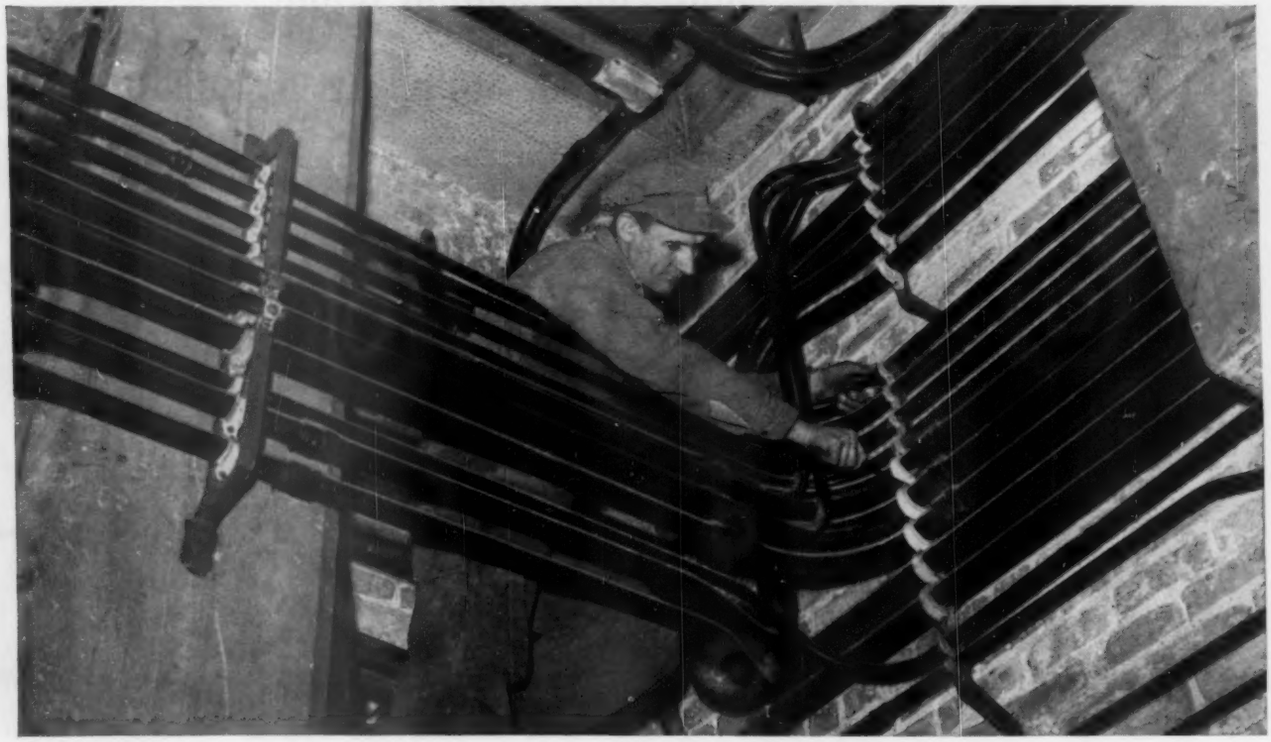
Six years later, much of the original ELECTRUNITE installation is still in service.

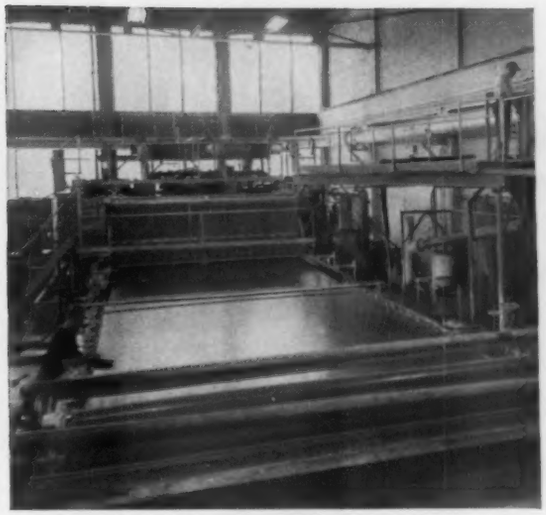
Here's why: ELECTRUNITE E.M.T. is produced from highest quality flat-rolled open-hearth steel made in Republic's own mills, carefully inspected to Republic's rigid manufacturing specifications. Tough, corrosive-proof polyethylene coating is applied over the galvanized finish, providing double protection against corrosion.

"Dekoron-Coated" E.M.T. is easy to install. It can be cut to length and bent to fit with ease. Moisture-tight, continuously grounded, corrosion-protected joints are made by wrapping the threadless connectors and couplings with plastic tape. Complete protection is assured from end-to-end throughout the run.

Republic ELECTRUNITE "Dekoron-Coated" E.M.T. costs less to install... less to maintain, meets electrical codes and specifications. Call your Republic representative or write today!

Republic ELECTRUNITE "Dekoron-Coated" E.M.T. outlasted standard galvanized carbon steel conduit ten to one over a six-year period at the Charmin Paper Products Company, Green Bay, Wisconsin. Major maintenance problems were eliminated.





CONVERSION TO STAINLESS STEEL PAYS OFF in cleanliness, uniform quality, minimum maintenance, and reduced costs at Allied Paper Corporation, Kalamazoo, Michigan. Older equipment, made from less versatile materials, is being replaced with equipment fabricated from Republic ENDURO® Stainless Steel. Allied is already enjoying a 50% reduction in weekly clean-up and maintenance time. Learn how ENDURO can help you save, too. Write today.

REPUBLIC ROLL-OVER BOXES SPEED HANDLING, reduce loss, cut costs. The Climalene Company, Chicago, uses Republic Roll-Over Boxes to store chemicals not needed immediately in production. Offset channels under the boxes permit tiering without obstruction at the top of the box. Republic Roll-Over Boxes are designed for use with trucks having a revolving-fork carriage, permitting the operator to pick up a box, roll it over, and dump the contents quickly and easily. Call your Republic Materials Handling Representative, or send coupon.

REPUBLIC WEDGE-LOCK STEEL SHELVING handles the heavyweights. Capable of exceptionally high stacking. Patented Wedge-Lock construction means that the heavier the load, the tighter the grip. Wedge-Lock includes all three prime essentials of good shelving: (1) a post that will not buckle, (2) a reinforced shelf that will not sag, (3) and a concealed sway-proof joint. Unlimited shelf arrangements. Send coupon for facts.

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World's Widest Range of Standard Steels and Steel Products

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Please send additional information on the following:
- ☐ Republic ELECTRUNITE "Dekoron-Coated" E.M.T.
- ☐ Republic ENDURO Stainless Steel
- ☐ Republic Roll-Over Boxes ☐ Wedge-Lock Shelving

Name_____ Title_____
Company_____
Address_____
City_____ Zone____ State_____

Jones®

ZENITH* PRESS

WITH EXCLUSIVE FLOATING CONE*

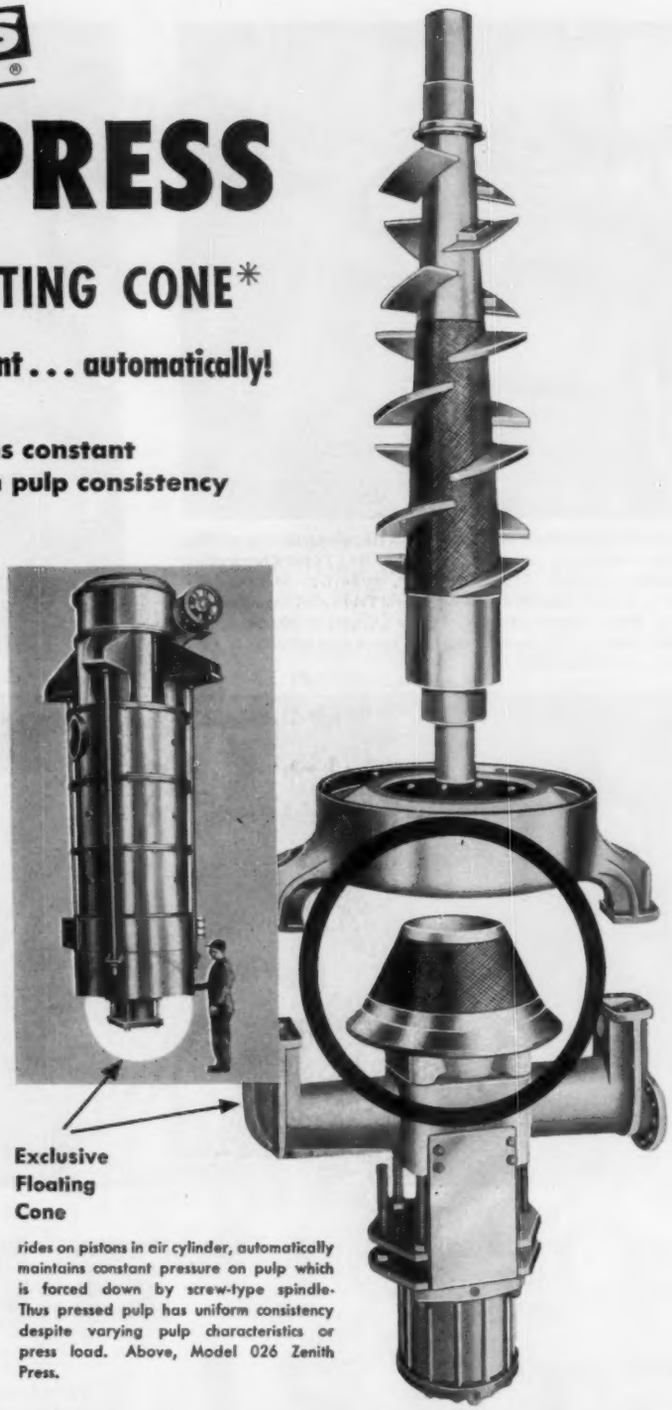
gives uniformly low moisture content . . . automatically!

Variable opening maintains constant pressure regardless of changes in pulp consistency or rate of flow.

Thanks to its exclusive floating cone, Jones' Zenith Press operates at constant peak efficiency to give the lowest possible processing cost. The Zenith thickens pulp slurries *without a pre-thickener* — and operates continuously — *without attention.*

Once the desired pressure is set, pistons, on an air cushion move the floating cone up and down automatically, changing the discharge opening as pulp consistency or rate of flow at the inlet end varies. Thus, the pressure on the pulp remains constant and you get a more uniformly low moisture product.

Because Zenith Presses are *vertical,* they require relatively little floor space. They have a capacity up to 20,000 lbs. per hour (dry basis) and are available in many sizes to accommodate individual mill requirements. For further details, see your Jones' representative or write direct.



Exclusive Floating Cone

rides on pistons in air cylinder, automatically maintains constant pressure on pulp which is forced down by screw-type spindle. Thus pressed pulp has uniform consistency despite varying pulp characteristics or press load. Above, Model 026 Zenith Press.

*Trade Mark

E. D. JONES & SONS COMPANY
Pittsfield, Massachusetts

IN CANADA: The Alexander Fleck, Ltd., Ottawa

Jones®

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

Albany Service Engineer checks felt installation during startup of The Ruberoid Co.'s new 150" trim roofing felt machine at Gloucester City, N.J.

HOW SERVICE ENGINEERING WORKS

The Albany Felt Service Engineer represents the ultimate in felt operation know-how. Unlike the Sales Engineer, who makes regular calls on your mill to take care of normal requirements, the Albany Service Engineer is the industry's top trouble shooter, always on call for emergencies. From consultation on machine design, through new machine startups and analysis of difficult felt operation problems, your Albany Service Engineer's years of specialized training and machine experience are available to help you operate more efficiently and economically.

His diagnosis of your felt requirements, translated to Albany's outstanding research-design-manufacturing team, inevitably results in better felts for your machine. Our Service Engineers are available whenever needed—their goal, as always, to help you produce more saleable tons per day!

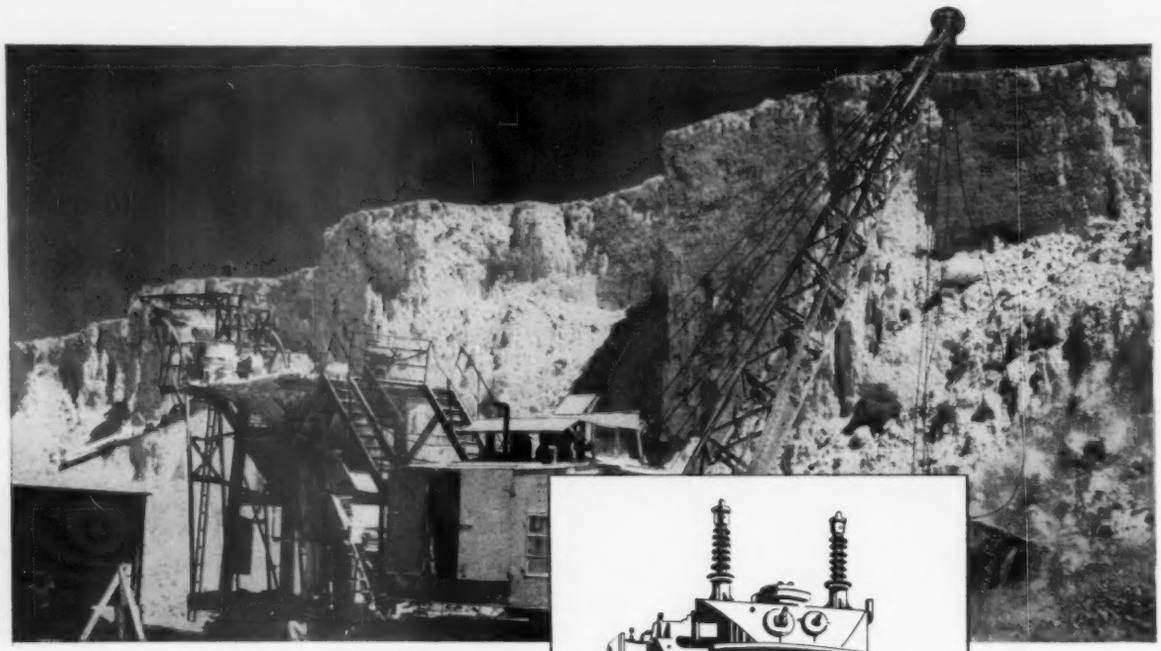
ALBANY FELT COMPANY

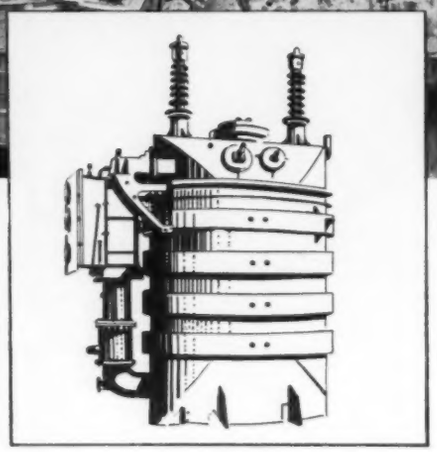
MAIN OFFICE & PLANT, ALBANY, N.Y.

OTHER PLANTS: HOOSICK FALLS, N.Y.; N. MONMOUTH, ME.; ST. STEPHEN, S.C.; COWANSVILLE, P.Q.

"THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS"

SULPHUR *helps to create Headline Products*





SF_6

A new concept in transformer insulation

GAS INSTEAD OF OIL . . . *that is headline news!*

Sulphur Hexafluoride is a heavy, non-flammable gas and is both chemically and physiologically inert. These characteristics plus its high dielectric strength pin-pointed the heavy duty transformer field as a logical target. And so it turned out!

SF6 instead of oil is now being used in high voltage transformers with the following advantages:

- **operations are much quieter**
- **lighter construction permissible**
- **less restriction in location**
- **lower maintenance**
- **fire-proof and explosion-proof**

In SF6, the electrical and electronics industries are finding a very useful product providing both electrical insulation and cooling. As in so many 'headline' products serving industry, the element S is part of the chemical structure!

Texas Gulf Sulphur Co.

75 East 45th Street, New York 17, N.Y.
811 Rusk Avenue, Houston 2, Texas

Sulphur Producing Units
- **Newgulf, Texas**
- **Moss Bluff, Texas**
- **Spindletop, Texas**
- **Worland, Wyoming**

CHLORINE the green goddess

觀世音

To the Buddhist, Kuan Yin is the goddess of mercy. To the chemist, this green goddess symbolizes chlorine — one of the most widely useful of all elements. Purifier, oxidant, bleach, extracting agent, its uses range from papermaking to ore reduction, from foodstuffs to insecticides, through scores of chemical and industrial processes. Its source, to many users throughout Mid-America, is Frontier Chemical Company . . . where salt brine is electrolyzed to produce chlorine that consistently exceeds 99.9% purity. From Wichita, Kansas, Frontier offers fast shipments by rail in 16, 30 and 55-ton tank cars and multi-unit cars of one-ton containers. From both Wichita and Denver City, Texas, Frontier also delivers by truck in one-ton containers. Frontier chlorine is tailored to your specifications for: Purity • Dryness • Accurate weight loading • Unloading convenience • Prompt shipment • Controlled quality. We are at your service.

Frontier® CHEMICAL COMPANY

BASIC PRODUCERS OF CHEMICALS FOR MID-AMERICA

FOR COMPLETE LIST SEE OTHER SIDE →

FRONTIER

Mid-America's
Basic Producer of

Caustic Soda

Muriatic Acid

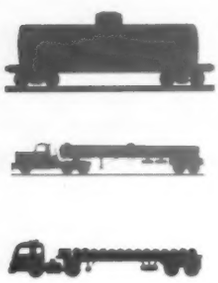
Chlorine

Hydrogen Chloride
(Anhydrous)

Chlorinated Solvents
and Grain Fumigants

Benzene Hexachloride
(14 and 36 gamma)

Fine Grain Salt



Perhaps you can profit from Frontier's strategic Mid-America locations — so much closer in time and distance to many users. You are sure to gain in other ways. You benefit from rigid quality control — the result of production from Frontier-controlled basic materials in one of the industry's newest and most advanced plants, and contamination-free shipment in Frontier's own new tank cars, highway tank-trailers, or standard containers.
You can build mixed lot shipments from Frontier's wide and growing line of products. Or you can locate your own new plant next door to ours, for easy "over-the-fence" deliveries. You'll like Frontier's sincere personal interest in your needs — our prompt and friendly service. We will appreciate your inquiry.

Frontier® CHEMICAL COMPANY
DIVISION OF VULCAN MATERIALS COMPANY
EXECUTIVE OFFICES: MUNICIPAL AIRPORT, WICHITA, KANSAS

Vulcan Materials Company

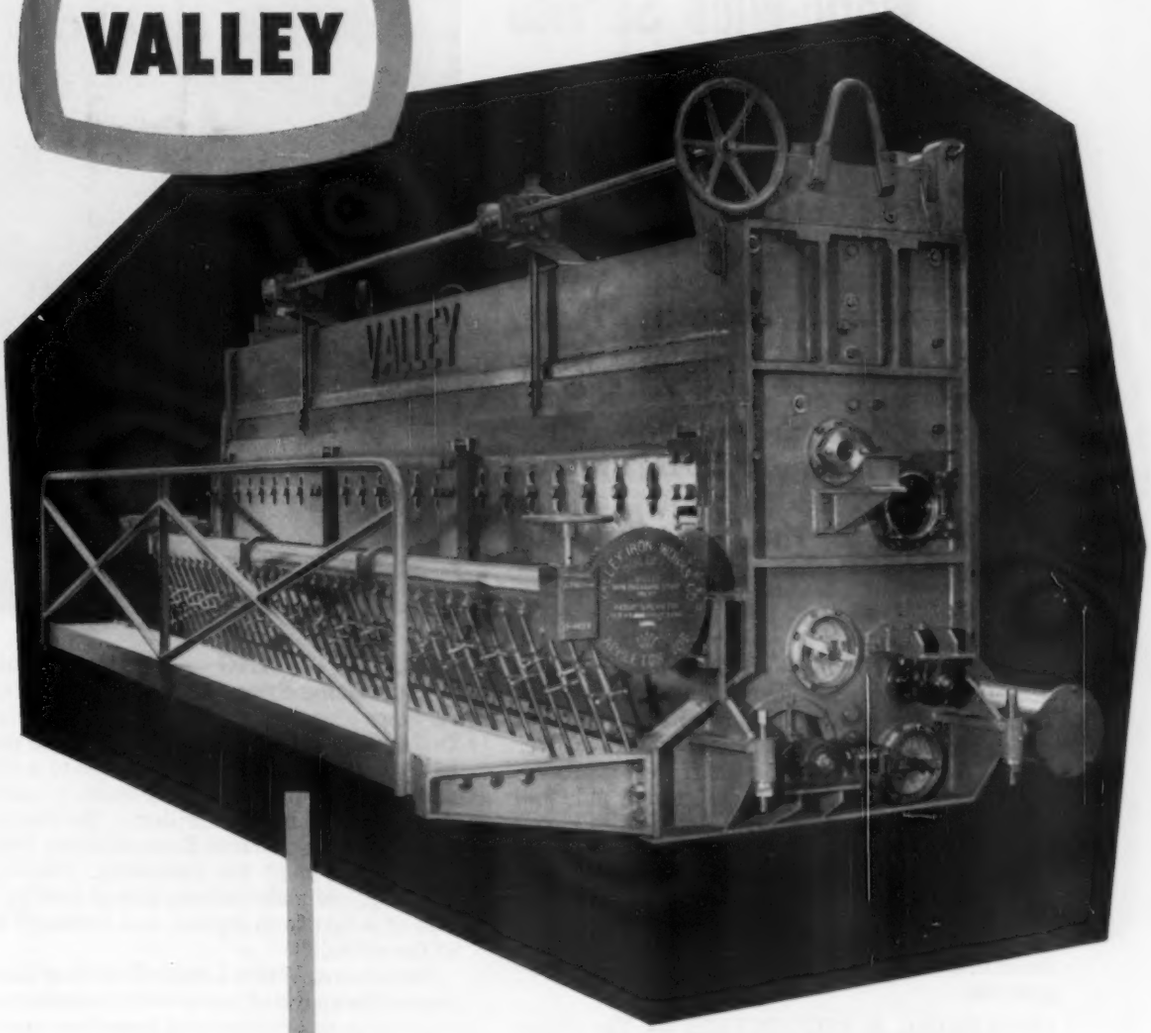
"Organized for Service"

THIS IS VULCAN MATERIALS COMPANY:
Birmingham Slag Division, Brooks Sand & Gravel Division, Chattanooga Rock Products Division, Concrete Pipe Division, Consumers Division, Lambert Division, Montgomery-Roquemore Gravel Division, Stockbridge Stone Company, Vulcan Detinning Division, Frontier Chemical Company, Teckote Corporation, Wesco Contracting Company.

For better Fourdrinier board:

AIRLOADED SECONDARY INLET-HEADBOX COMBINATION

by **VALLEY**



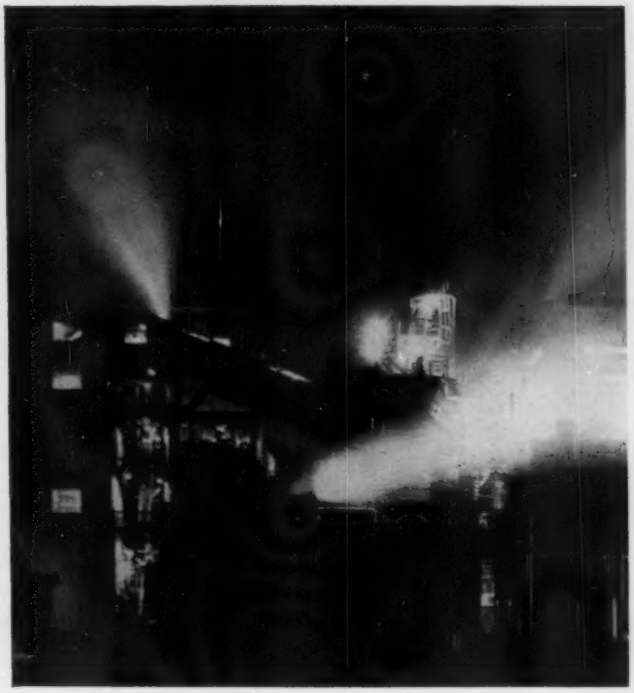
Whenever we advertise "Another Airloaded Headbox by Valley", it means that another mill has taken a progressive step to protect its competitive position and to strengthen its capacity for increased profits. We will be pleased to supply you with comprehensive facts and data. Your inquiry will be welcomed.

VALLEY IRON WORKS COMPANY APPLETON, WISCONSIN

Canadian Representatives:
Pulp & Paper Mill Accessories Ltd., Box 903, Station "O", Montreal 9, Quebec

FOR THE PULP AND

World-Wide Service by DORR-OLIVER



Complete systems . . . individual equipment units . . . specialized engineering talents . . . skilled research staff . . . Dorr-Oliver can serve you in any capacity.

Our facilities are global. Dorr-Oliver's international network of associate companies, representatives, and manufacturing plants makes up a talent pool that can help you apply the latest pulp and paper techniques to your specific problems.

BLEACH WASHING — The Dorr-Oliver Continuous Pulp Bleaching System . . . a highly efficient bleach washing system comprised of a series of storage towers, chests, chemical towers, Oliver Bleach Washers, D-O Double Shaft Heater Mixers, D-O agitators and nozzles . . . designed by pulp mill engineers for pulp mill service.

BROWNSTOCK WASHING—The Oliver Brownstock Washing System . . . an efficiently designed system in which Oliver Washers are available for either single or two stage operation on a single drum in a wide range of capacities for multi-stage systems.

DECKERING & THICKENING — The Oliver Decker . . . a dependable, high-capacity unit available in Ringvalve, Cone Valve or Jet Flow Valve design . . . can be constructed of materials to meet practically any corrosion problem.

The Oliver High-Density Thickener . . . for the production of a uniform consistency sheet with a high pulp density. Oliver Decker-Saveall . . . a combination unit that simultaneously thickens screened pulp and recovers stock from waste white water.

SCREENING — The Oliver-Ahlfors Screen . . . a flat screen operating on the "upflow" principle. Has many advantages over conventional types.

RECAUSTICIZING — The Dorr Continuous Recausticizing System . . . the standard chemical recovery process for the alkaline pulping industry. Delivers a clear white liquor of uniform causticity to the digester . . . holds soda losses to a minimum and improves the entire pulp-making operation.

The Oliver Lime Mud Filter . . . the standard unit in the Dorr Continuous Recausticizing System for recovery of mud for reburning. Provides high capacity, low maintenance, almost perfect separation of solids from liquids, and thorough washing of the solids.

The Dorrco White Liquor Polishing Station . . . can be incorporated into new and existing recausticizing systems. Particularly important to producers of bleached and dissolving pulps.

SHEET & BOARD FORMING — The Oliver Boardforming Machine . . . for continuous formation of uniform caliper insulation and/or hardboard.

The Oliver Sheetformer . . . produces a continuous, uniform sheet suitable for either pulp drying or wet machine operation.

FIBRE RECOVERY & WASTE TREATMENT —The Oliver*Saveall . . . a drum type vacuum filter

PAPER INDUSTRY...

to meet practically any mill condition. Handles wet breaks, white water, without separate system.

The American*Saveall . . . ideal where large filtering area is indicated. Disc type design requires a minimum of floor space.

Dorr Clarifiers and Thickeners . . . a complete line of sedimentation equipment to provide primary treatment (suspended solids removal and BOD reduction) to general mill effluents, deinking waste water, etc.

The Currie Claraetor* . . . a combination unit providing both clarification and aeration. Provides complete treatment for mill effluents by the activated sludge process.

WATER TREATMENT — The Dorrco PeriFilter System . . . combines pretreatment and rapid sand filtration in a single unit with two or more units normally installed in parallel. Also a complete line of conventional and high-rate equipment units to solve any pulp mill water supply problem.

SO_2 PRODUCTION — The Dorrco FluoSolids* System . . . a radical departure from conventional roasters which produces a high-strength SO_2 gas for cooking liquor from pyrite, pyrrhotite and other sulfur-bearing ores.

For Further Information . . . We'll be glad to send you detailed information on our world-wide equipment and services for the pulp and paper industry. Associated companies are in Australia, Belgium, Canada, France, Germany, Great Britain, India, Italy, The Netherlands and representatives in Argentina, Brazil, Cuba, Denmark, Greece, Japan, Philippines, Puerto Rico, South Africa, Spain, Sweden, Switzerland, Venezuela.

*Registered Trade Mark

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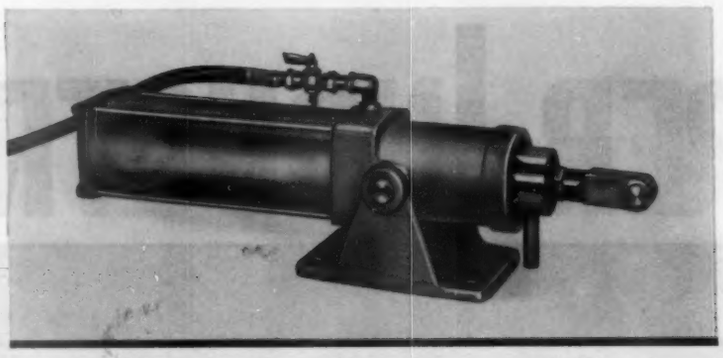
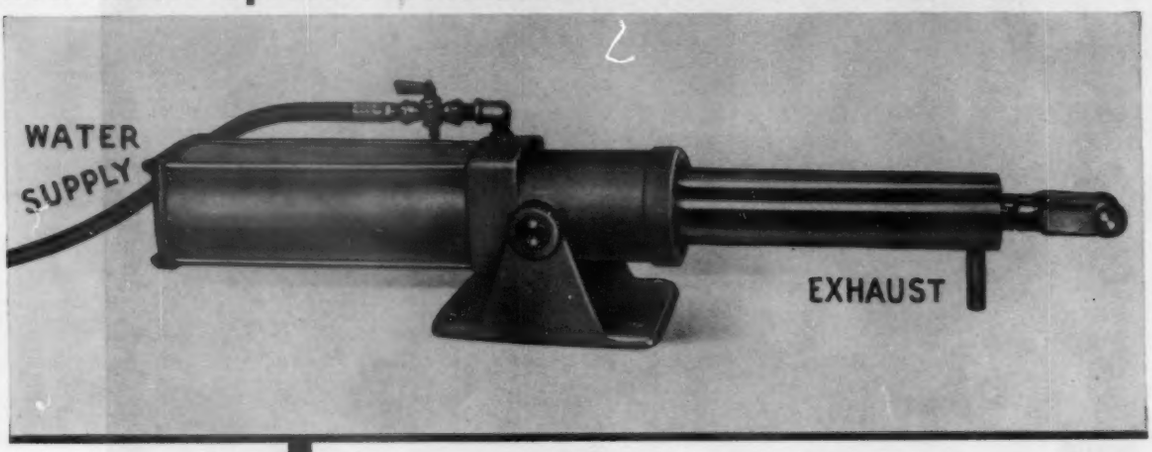


LODDING

New Water-Operated Oscillator for Showers and Doctors



This Lodding development requires a relatively small volume of water for operation, produces a constant back and forth stroking action, or may be adapted to give a uniform rocking motion. Predetermined strokes, ranging from ¾ inch to 20 inches, are provided by the unit, while the rate can be varied easily from 1 to 25 strokes per minute while in motion.

In such applications as headbox showers, the rocking motion allows the shower to sweep the headbox by rotating through an angle of up to 90 degrees. The back and forth motion can be utilized for either doctors or showers.

LODDING ENGINEERING CORPORATION
WORCESTER, MASSACHUSETTS

This is the world's most modern, most efficient Fourdrinier wire weaving plant. Appleton's Montgomery plant is equipped to produce wires for the widest, fastest machines being built. In operation since 1955, the AWW-designed equipment is already working at capacity supplying Fourdrinier wires for machines all over the country. The Montgomery operation is just one of three AWW plants equipped to fill all your Fourdrinier wire requirements. Appleton's 62 years experience and ability are your best answer to profitable Fourdrinier wire performance. We invite you to discuss your wire needs—or problems—with an AWW representative.

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Things to come

In this special PULP & PAPER feature, 38 engineers and associates at TAPPI Engineering Conference peek into future

• With the year's biggest gathering of creative and long-term planning engineers in this industry at the 13th Annual Engineering Conference in Portland, Ore., in late July, PULP & PAPER seized the opportunity to invite many of the leaders present to suggest some "things-to-come" and do a bit of "crystal ball gazing" for benefit of its readers. Here were the results:

SYSTEMS ANALYSIS . . . "The industry is too big and complex for decision-making based on years of personal experience. New to many oldtimers will be decisions based upon systems analyses, high speed electric computers, etc."—**John (Ray) Curtis,** director of mechanical research, Scott Paper Co., and chairman of TAPPI Engineering Conference.

MORE LEVEL PAPER . . . "Manual attention isn't good enough. More uniformity across machine and no breaks will come with automation and careful attention to every detail."—**Ward Harrison,** vice pres. i/c production, Riegel Paper Corp., and president of TAPPI.

TRAINING . . . "We won't just dip our hand in the barrel anymore. We will triple and quadruple our trained staffs with a forward-looking program for administrative, technical and engineering training."—**Justin H. McCarthy,** vice pres. in charge of engineering, St. Regis Paper Co.

OVER 3,000 FPM . . . "We are at the 'sound barrier' of papermaking at 3,000 fpm and the breakthrough is coming."—**C. G. Russell Johnson,** chief engineer, Kimberly-Clark Corp.

MORE HORSEPOWER . . . "We will handle everything with more horsepower and less manpower. Also, the days of table rolls are numbered." —**M. J. Osborne,** electrical supt., Bowaters Southern Paper Corp.

SULFITE PULPING . . . "In ten years there will be more, but it will lose its identity as acid pulping. It may be neutral sulfite and it will be continuous."—Members of TAPPI Acid Pulping Committee.

FAST GROWING FIBERS . . . "We will find and make use of more fast growing fibers, such as bamboo. We'll find an economic process."—**George Athos Adamson,** pres. of Adamson Engineering Co., Pasadena, Calif., and tech. director of Philippine Paper Mills, Manila, P.I.

ROCKY MT. MILLS . . . "The next big woodpulp push will be in the Rocky Mountains region."—**W. O. Hisey,** vice pres. and director of engineering, Boise Cascade Kraft Corp.

FASTER, BETTER, CHEAPER . . . ". . . is the way everything will be done. Also, on-the-spot chipping, feeding in little stuff and big stuff economically and doing a cleaner job."—**Edwin H. Olmstead,** president, The Eaton-Dikeman Co.

UNIT PACKAGING . . . ". . . will be important future trend, devised in such a way that cost of shipping to consumer will be greatly reduced."—**Bert C. Kendall,** asst. mgr. of industrial engineering, Crown Zellerbach Corp.

AUTOMATION TWIST . . . "Be prepared for some queer twists in the use of automation in the pulp and paper industry."—**Walter D. Watt,** plant engineer, Weyerhaeuser Timber Co., Cosmopolis, Wash., pulp mill.

PULP-RAYON INTEGRATION . . . "Pulp and rayon mills will be integrated at the same location. This also will happen with pulp and chemicals." —**Minoru Yoshimura,** engineering asst. to exec. vice pres., Alaska Lumber & Pulp Co., Sitka, Alaska (under construction).

SHEET FORMATION . . . "One of greatest mysteries of papermaking will be solved when we know how and why a sheet is formed."—**Nicholas Schoumatoff,** mgr. of manufacturing services, West Virginia Pulp and Paper Co.

FASTER SPEEDS . . . ". . . will be attained with better controls. The roadblock is formation but it will be overcome."—**Barry M. Turner,** chief engineer, Northern Division, International Paper Co.

TREES TO GRASSES . . . "As more wood is required, less desirable woods will be used. As time goes on, this utilization will be successful down through hardwoods, scrap woods, into the bamboos, canes, grasses, etc."—**Brister B. Pierce,** chief engineer, Gaylord Container Corp.

ATOMIC ENERGY . . . ". . . is the coming thing for steam and power. It is going to come sooner than some may expect."—**Virgil M. Sutherling,** chief engineer, Longview Fibre Co.

COOPERATIVE RESEARCH . . . "There will be more independent research for benefit of the whole industry—cooperation of competitors."—**John D. Lyall,** supervising project engineer, Armstrong Cork Co.

INCREASED DRYING . . . "There's

The Future of Automation—Tapes for Driving Machines

C. V. "Greg" Gregory, general sales mgr., Reliance Electric & Engineering Co., Cleveland, the highest ranking electric industry executive present at the 13th Annual Engineering Conference in Portland, Ore., was invited by PULP & PAPER to forecast the future of automation. He said:

"Automation is in its infancy. We are going to put schedules on tape, feed the tape into a system which will provide the impulse for electrical equipment and the drive function for paper machines.

"It is already being tried in the steel industry. It will mean the survival of industry."

a chance for several hundred percent increase in drying, especially for heavier papers, when we learn some tricks."—**Myrl (Deac) Davis,** mgr. of research laboratories, Kimberly-Clark Corp.

QUALITY CONTROLS . . . "There will be very minute automatic controls all the way through—weight, drying, etc., and something will be done about formation control."—**George R. Lydick,** chief engineer, Beckett Paper Co.

PULPING REVOLUTION . . . ". . . is coming, with the greatest changes in 80 years in techniques. Semi-chemical will be brought down to 60% of 50% yield for higher quality pulps than we have ever known."—**Aux P. Schnyder,** pulp and paper division chief, The Lummus Co.

PULP EVALUATION . . . "We will achieve a much better end product test, to evaluate quality and strength on the machine."—**L. D. McGlothlin,** kraft mill supt., Crown Zellerbach, Camas, Wash.

MACHINE HOODS . . . "We know least about machine hooding and machine ventilation and here is where big changes are coming."—**Eldon C. Gamble,** chief engineer, The Northwest Paper Co.

"A CHANGE OF SUBSTANCE" . . . "Some day there will be a complete change in the substance that will, in effect, take the place of paper as we know it today. Our natural resources may also be radically different."—**Samuel M. Bratton,** consultant, Wilmington, Del.

HIGH VELOCITY DRYING . . . ". . . is the big future, as the industry points to more efficient drying on the machine and in coating."—**Casey Nelson,** chief engineer, Gilbert Paper Co.

THE BLADE COATER . . . ". . . and what effect it is going to have on the industry is one of the biggest things on the horizon."—**M. V. (Molly) Molsberry,** chief engineer, Consolidated Water Power & Paper Co.

NEW HEAT BALANCE . . . ". . . for the mills will be a big change in the future. More continuous digesters and high pressure evaporation are coming."—**James H. Hull,** chemical engineer, Central Engineering, Crown Zellerbach Corp.

IMPROVED FORMATION . . . "There's no limit to the amount you can refine, no limit to the amount you can dewater, but the big opportunity and development will be in improving formation."—**Marcy Newell,** technical asst. for paper, Ecusta Paper Corp.

FROM WOODS TO POT . . . ". . . will be the big change. It means big short cuts from woods to digesters, with radically different woodhandling and less clumsy chipping techniques."—**Boris R. Rubens,** consulting engineer, Stevenson & Rubens, Seattle.

100% CONTINUOUS COOKING . . . ". . . is coming in kraft, replacing all conventional cooking and more scrub hardwoods will be used, especially in the South."—**J. E. Mailhos,** superintendent of utilities, maintenance and engineering, Bowaters Carolina Corp., Catawba, S. C.

NEW COATING CONCEPTS . . . "Big changes are coming—also in the finishing department. Many old concepts will be forgotten, as new principles are understood and effected."—**William A. J. Mitchell,** president, Central States Engineering Inc., Appleton, Wis.

AUTOMATION ALL THE WAY . . . ". . . is only a matter of time. It will be practiced all the way from the tree to the reel and beyond."—**James H. Davidson,** chief engineer, Minnesota & Ontario Paper Co.

FINISHING ROOM . . . ". . . will be much more mechanized than is even the case today. There are big opportunities here."—**William A. McKenzie,** chief engineer, Simpson Timber Co.

LESS COSTLY DRYING . . . "The dryer is, as it exists, a most expensive way to dry paper, and limits improve-

Some "Crystal Ball Gazers," and Other Engineers, Caught by P&P Camera on Woods Tour

Elmer Macklem — John (Ray) Curtis — C. G. Russell Johnson — George A. Adamson — Nicholar Shoumatoff — James E. Wilkinson

M. J. Osborne — Wiliam Wyburn — Barry Turner — Wm. Reynolds — Myrl "Deac" Davis — John Lyall — Ed H. Olmstead

ments. Big changes are coming."—**Charles E. Hill,** project leader of equipment engineering section, West Virginia Pulp and Paper Co.

"ALL BUT THE SQUEAL" . . . "That famous statement in the meat industry will apply to pulp and paper. We will use every wood species and virtually all of the tree."—**Bud Johnson,** chief engineer, West Coast Division, Scott Paper Co., Everett, Wash.

SMALLER MACHINE ROOM . . . "Length of rooms will be greatly reduced with high velocity drying and other efficiencies. This will greatly reduce the cost of paper machines."—**Lawrence C. Crowder,** chief engineer, St. Regis Paper Co.

NEW CHEMICALS . . . ". . . will be used in bleaching. There will be better ways to put stock on the wire. Suction rolls and suction boxes, as they exist now, will be replaced. Cooking will be continuous. And we will have better tasting paper coffee cups."—**James E. Kearney,** mgr. of industry engineering, Ebasco Services, Inc.

BETTER COOKS . . . "The future of this industry is the continuous process. A much improved method of heating and impregnating chips will produce pulps in proper sequence."—**Roderick O'Donoghue,** consulting engineer, New York City.

LARGER DIAMETER ROLLS . . . ". . . are coming in coating, to meet higher speed and production requirements."—**Stephen A. Barry,** plant engineer, St. Regis Paper Co., Bucksport, Me.

Engineering Conference Highlights

Five-day meeting in Portland, Ore., featured by advances in fluid mechanics and other fields which may revolutionize industry

• The five-day long 13th Annual TAPPI Engineering Conference, which ended in Portland, Ore., on Aug. 1, was important because in several of its sessions it paved the way for things that are going to be more important.

This is revealed in many of the papers reviewed in these pages, but no more dramatically than in the papers given in the fluid mechanics sessions. These papers showed this industry is definitely getting down to the fundamentals of sheet formation and soon will be producing a better sheet for less money.

This bright prospect is based upon the TAPPI fluid mechanics committee's fundamental studies of individual fiber mechanics and behavior, which has little to do with the old "art" of papermaking. It has much more to do with what might be called the scientific reasonableness of papermaking.

Other highlights were papers on dryer drainage, on anodic protection for digesters, on Dow Chemical's training of maintenance personnel, and one on a semi-automatic paper reshipping warehouse which caused quite a number of delegates to journey over to Portland's Waterway Terminals Co. to see for themselves.

Papers on corrosion control were favorably commented upon, especially a report from the Pulp and Paper Research Institute of Canada, which showed how anodic protection can be used in stationary kraft digesters when oxidized black liquor is used for makeup.

In pulp bleaching processes, J. E. Wilkinson of Champion's Canton, N.C., mill emphasized that mill engineers and operators cannot hang their hats on mere results of a corrosion test. They must know the significance of these tests (see article by Ed Hopper for further comments on corrosion papers).

Record Set for Length

The 13th annual set a five-day record for longevity, and if you count a Sunday for checking into the Multnomah hotel, it was six days long. Beside mill tours at Camas and Longview, Wash., and West Linn and Oregon City, Ore., to see some of the West's biggest and most diversified pulp and paper operations, there was also a day set aside for a thrilling scenic tour of woodlands and high-lead logging by Crown Zellerbach in the Oregon coastal range.

There were 560 men and 171 women registered for this first Engineering Conference to be held west of Milwaukee. About 50 extra tickets were sold for the banquet. The non-industry engineering salesmen and consultants outnumbered industry engineers about two to one, but most all took active interest in proceedings.

There was high praise for General Chairman Jack Wilcox (of Esco) and his local conference committee from Portland and vicinity for one of the best-arranged and smoothest flowing Engineering meetings ever held. The pre-registration, which eliminated all waiting and in a jiffy had everyone in their rooms in the Multnomah or elsewhere, with all tickets and literature, made a special hit.

The 14th Engineering Conference is set for Pittsburgh, starting Oct. 11, 1959. Tours of Westinghouse plants and others are programmed.

Fluid Mechanics Progress

Kenneth MacKenzie of Eastman Kodak presented a paper prepared by

Front Line Committeemen

(L to r) **Wayne Mitchell,** Link-Belt Co., registration; **Robert H. Smythe,** Ray Smythe Co., finance; **Jack M. Wilcox,** Electric Steel Foundry Co., general chairman; **J. M. McCullough,** Pennsalt Chemicals Corp., housing.

his associate, Wm. E. Guthrie, describing an apparent viscosity for use in the application of Reynolds numbers to the flow of dilute pulp suspensions. These numbers agree with the intensity of turbulence which is observed on open channel flow. This paper was described as one of the most significant, and should prove valuable in future work on headbox design.

Purging Felts with Air

Water removal from felts by purging with air pressure was described by Jerome W. Riese, research physicist, Kimberly-Clark Corp. A water-sealed Nash pump was used for air source and also a compressed air source which allowed a lower pressure range. The air permeability of a felt was found to depend largely on the degree of saturation of the felt, as well as structural properties.

It was found that purging of water from a felt takes place in two steps: 1, in less than a second water particles burst from the felt as larger pores are cleared to allow air through, and 2, the air flows through at a fairly constant rate and remaining water is slowly removed by erosion and/or evaporation.

Only the first step gives fast enough drainage to be of interest in papermaking applications. Repeated use of this initial burst is possible only if one waits for a long time between applications or if the felt is subjected to mechanical pressures between purges.

In the second step, the rate of air flow through the felt is directly proportional to the pressure drop across the felt. The constant of proportionality (permeability) depends on the degree of felt saturation.

A more quantitative measurement of the small time interval required in the first step would be useful as a criterion for vacuum box slit widths. These tests could be used to compare the "purging parameters" of different types of felts.

MIT Tests

Prof. J. W. Daily of Massachusetts Institute of Technology described some of the most important work done in fluid dynamics in the MIT Hydrodynamics Laboratory. It was on flow characteristics of dilute fiber suspensions, using kraft pulps from Kimberly-Clark's Terrace Bay, Canada, mill, also pulps from Coosa River, and poplar groundwood and nylon. This program is being continued for one year and will include measurements of turbulence.

Flow of suspensions of the wood fibers described ranged in concentration from 0.1 to 1.0%. Friction losses in pipes of various sizes were measured. A gauge for registering turbulent fluctuations was developed.

Visual Approach to Drainage

In part a controversial presentation was a photographic study of drainage by Gleb Goumeniouk, Vancouver, B.C., consultant, formerly with Powell River Co. He said it was a practical approach without numbers or mathematics. Visual approach should precede an analysis, he said. "We must see it first," he added. He showed pictures selected more or less at random from 14,000 negatives.

Drainage rates are altered by configuration, he held. He named four elements or "forces" of drainage: 1, gravitation force; 2, dynamic force (related to motion); 3, surface tension component (physically important); and 4, suction component ("my notion of suction is different from what I have seen in literature"). He explained the suction component overlays dynamic forces. His pictures depicted the total hydrodynamic behavior of the fluid during formation on a Fourdrinier.

Continuing work at the University of Maine on pulp flow in piping was reported. A shear tester and a microscope for determining fiber length will make possible calculation of pipe friction with greater accuracy than ever before.

Materials Handling

The Portland Waterway Terminals paper by R. T. Fisher, which attracted many delegates to the plant for firsthand observation, described a 600,000 sq. ft. covered dock and warehouse to improve service as a storage and interchange point between land carriers and barges. To sort and move daily traffic of about 1,200 tons of a wide variety of paper, a semi-automatic conveyor of unusual characteristics is used. Low cost was attained, with high clearances, unobstructed areas, and good carrier facilities in the building.

The flexible conveyor system handles sorting, collection, and two-way traffic of heavy, unstable loads. It is a subfloor chain pulling captive carts, integrated with six automatic hoists. Empty carts feed onto hoists, lower to barge level for loading, ascend and move into the warehouse. A dispatcher directs carts to spurs where they are stopped and accumulate in segregation areas. Fork trucks unload the carts which are released by remote control and return to the barges to repeat the cycle.

Civil Engineering Chairman

William C. Pittam, pulp-paper engineer, Stone & Webster Engineering Corp., Boston, Mass., chairman of Civil Engineering Committee formed at this session.

Chips from Sawmills

Curtis E. Green, J. E. Sirrine Co., and C. D. Blake, Union Bag-Camp Paper Corp, reported how Swedish-built (Soderhamn) log debarkers were installed in two Southern sawmills to remove bark from pine logs before they were sawn, and revolutionized the sawmill industry into utilizing waste that was previously burned for disposal.

Newer and less expensive log debarkers now also make wood waste utilization attractive to smaller sawmills.

Waste chippers were limited to inclined feed spouts with the early models, making use of gravity feeding and forced feed supplementing. Inclined spout models are now available for overhead or bottom discharge. There is now a trend to chip specifications in the South that include normal screening.

B. Nicholson of Nicholson Mfg. Co., Auburn, Wash., said a recognized but generally unappreciated fact is that the debarking of sawlogs, and the production chips, give many benefits other than income from the sale of chips. Many sawmill operators are coming to realize that the saving received from sawing debarked logs are very important, he reported, in some cases even more beneficial than the revenue from chip sales. These are increases in lumber recovery per log, grade of lumber, saw life, accuracy of sawing, and lumber production per shift. Also a cleaner and safer mill floor results.

New Developments in Dryers

Drying sessions featured the new Gardner dryer, manufactured by Overly's, Inc. and distributed by Rice Barton, which uses high velocity air

for rapid drying. According to inventor T. A. Gardner, of Marathon Corp., this dryer has a capacity "three times greater than the typical (dryer) unit."

A feature of the Gardner dryer is the arrangement of nozzles applying high velocity air to the web. These nozzles are set close (¾ to 1-in. centers) with the ends located from ⅛ to ½-in. from the web. Orifice size ranges from .015 to .025 in. Air is supplied to the nozzles at pressures providing 10 to 20 thousand fpm orifice speeds. "Since the air volume from the narrow nozzle is small, power required is not excessive and the concentration of kinetic energy is within safe limits," Mr. Gardner says.

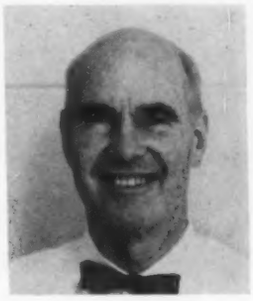
The relative velocity of air on the surface is many times conventional web speeds, so the effect of web speed is negligible.

Low Temperature Drying

In discussing Minton vacuum dryers, L. E. Hill, Jr., plant engineer of sulfite mill, Pulp Div., Weyerhaeuser Timber Co., Everett, Wash., said "a large increase in drying rate and much lower maximum temperature of the pulp or paper web" is achieved by the enclosed type dryer. The sheet enters and leaves through rolling seals to minimize air infiltration into the pressure-tight shell in which a vacuum of around 24 in. is maintained and rapid evaporation takes place by boiling at 141° F. Vapor is condensed and non-condensable air removed by vacuum pump. Care must be taken, Mr. Hill points out, to avoid too rapid evaporation at the wet-end dryers.

When estimating cost of a vacuum dryer vs. an open machine, consideration should be given to its compactness, said Mr. Hill. A smaller machine room and minimum requirements for air circulation are credits. The quality of product dried at lower temperature is better retained.

By drying at a lower average temperature, there is less loss of strength and brightness; the dried pulp repulps more readily, and during drying there is no contact between the sheet and large volumes of air; removing one possible source of fine dirt.



Evaluates Vacuum Dryer
L. E. Hill Jr., Weyerhaeuser Timber Co., Pulp Div., Everett, Wash.

Drainage Syphons

Robert A. Daane, Beloit Iron Works, Beloit, Wis., disclosed problems resulting from increased dryer speed. Historically simple stationary syphons "worked well" at speeds to 500 fpm. Condensate in the dryer was not rimming and heat transfer coefficient between steam and dryer was high. At 700 fpm and higher, stationary syphons did not work well. To maintain a non-rimming puddle in the dryer required too much power; if rimming, it is important to keep the condensate layer thin because of of its poor heat conductivity.

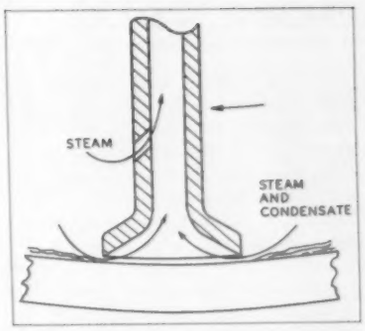
Removal of condensate from dryers at higher speeds was improved by the rotating syphon, working well for speeds to 1500 fpm. But for dryer speeds of 2,000 fpm and higher, the pressure differential needed to evacuate condensate from a rimming dryer increases considerably because of centrifugal force acting on the condensate in the rotating syphon pipe.

To overcome the difficulties inherent with the ordinary rotating syphon a new type was developed by Beloit. The inlet space is narrow, extending around the periphery of the syphon, and the stem is equipped with steam bleed hole positioned high enough that it will not be covered by rimming condensate.

Residual water measurements made with the revised syphon show that, for pressure differences near the safe value needed for evacuation, the condensate layer thickness is usually close to minimum values, less than half as much condensate as that maintained by the original rotating syphon operating at the same pressure difference and with a larger blow-through rate.

Maintenance Requires Training

Training of maintenance and engineering personnel "is a marvelous tool to help increase the efficiency of operations," according to R. G. Smith, Dow Chemical Co., Midland, Mich. Rather than pitch such training programs "out the window" when the company loses some of its "boom," he says it would be "much wiser to accelerate training efforts." "If there is a need for training and the training program is sound and practical, then it is shortsightedness to greatly curtail or eliminate training as a means of cutting plant costs. To do so is to eliminate the very tool that could cut plant costs."



DRYER SYPHON—Beloit's new design rotating dryer syphon has steam bleed hole and narrow circular inlet for efficient removal of condensate.

Mr. Smith's long range look at the skilled manpower picture: Production will increase by $169 billion during the 1955-65 decade, calling for adding ten million workers to the labor force. Difficulties are predicted in obtaining the highly skilled and trained people needed in today's rapidly advancing technology. "Our need for trained people increases in proportion to the complexity of our machines. Technology has not replaced people. It has demanded more highly skilled people." No increase in the number of men in the prime working ages between 25 and 44 is predicted during the period but two million additional skilled craftsmen and two million technical and professional men will be required. To obtain these will require "training more of the men we already have."

IBM For Maintenance Records

The importance of skilled, dependable foremen and supervisors for maintenance planning, scheduling and cost recording was borne out by panel participants V. M. Sutherling, chief engr., Longview Fibre Co., Longview, Wash., and A. M. Cady, asst. supt. general mill maintenance, Crown Zellerbach Corp, Camas. These plants, each producing in the 1,000 ton/day magnitude, have the common objective of keeping equipment shutdowns at a minimum.

The engineering department at Longfibre uses the plant's IBM system for planning, scheduling and cost control records. Consequential mill equipment is assigned a code number and monthly IBM reports show charges against same. These charges include labor cost by craft, mill storeroom purchases, outside purchases and labor charges against work orders. This record is useful for detecting "maintenance hogs" and in making economic justification for equipment replacement.

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The Crown Z mill concentrates planning effort of foremen and supervisors on the large unusual jobs; shutdown work is tied to operating schedules; performs urgent jobs first and keeps a backlog of routine work on hand at all times. Cost summaries, by departments and large jobs, are prepared weekly and monthly. Cost reports are not put out on every work order, but if any are suspected of being out of line, the cost can be obtained via the plant's IBM section.

Mechanical Engineering

(L to r) Chairman **M. N. Davis**, Kimberly Clark Corp., Neenah, Wisc., **George Spencer**, Torrington Co., South Bend, Ind., **Otis R. Witworth**, Black-Clawson Co., Watertown, N.Y. **W. E. Stone**, sales manager, Rice Barton Corp., Worcester, Mass., **R. H. Rhoads**, J. E. Rhoads & Sons, Wilmington, Del.

Improvements in Machine Drives

Developments in paper machines drives and their overlap of operational ranges extend the scope of application and increase rewards in picking the most suitable one for a specific application.

During the past couple of years the flat belting industry has been in a "revolution." According to Richard H. Rhoads, of J. E. Rhoads & Sons, Wilmington, Del., its been "good for the industry." Slightly over two years ago the first plastic reinforced flat belts appeared on the American market. This belt combined the best features of leather with a "very substantial reduction in the amount of permanent elongation." Says Mr. Rhoads, stretch reduction has been so extensive that a "well designed plastic reinforced belt rarely requires adjustment" after installation.

Leather-faced nylon-core belts weigh less than conventional belts of the same capacity, are practical for 10,000 to 12,000 fpm operation as compared to practical limitation of 6,000 to 7,000 fpm for leather or rubber belts; and the leather-nylon units are practical for short-center operation. One such belt running over cone pulleys on 27-in. centers in one paper mill is still operating after two years without adjustment or other attention, Mr. Rhoads says. The nylon core is made in thicknesses ranging from 24/1,000 to 216/1,000-in., the thicker cores made up of laminations. The ultimate tensile strength of the core alone under normal atmospheric conditions ranges from 20,000 to 30,000 psi; tensile strength increasing when the plastic is dry, decreasing when wet. Normal design calls for a safety factor of 10 to 1. On this basis, according to Mr. Rhoads, plastic belts are frequently one-half to one-third the width of conventional leather or rubber belts for the same drives. The narrower belts being particularly suitable for use on cone drives as this reduces the forced stretching at the edges.

Interest In Worm Drives

Worm gear dryer drives, said W. Ernest Stone, sales mgr. of Rice Barton Corp., Worcester, Mass., are particularly suited to small machines. A two-level dryer section has two line shafts for top and bottom dryers—with the worm of each dryer drive set into and a part of the line shaft. Connection portions are floating shafts with flexible couplings. The two shafts are positively connected together; hence there is but one power input per section of dryer. Although the worm itself (not the screw thread) must have sufficient capacity as a shaft to drive subsequent units of the section, each worm gear drives only its own dryer.

Cost lies between the usual type of enclosed small-diameter helical gear system and the older large-diameter open gears, according to Mr. Stone. A high degree of ventilation is achieved because drives are in line with the dryers and do not extend beyond dryer faces to impede flow. Symmetry about the machine's center line helps eliminate unequal drying. Front and backside dryer frames are identical and the gear casings offer no additional obstruction. Backside accessibility is nearly equal to front-side. Load irregularities are not freely transmitted from dryer to dryer, hence synchronized pulsations do not build up. Worm gear sets have the same noise and lubrication advantages of enclosed helical gears plus the inherent gain of gradual tooth contact.

Differential Gear Drives

As a result of recent improvements and developments, mechanical drives can be applied to any machines now built, according to Otis R. Witworth, Black-Clawson Co., Watertown, N.Y.

His discussion featured the new

Training and Education for Maintenance Personnel

Chairman **R. Q. Conner**, Crossett Co., Crossett, Ark. (seated), **R. G. Smith**, Dow Chemical Co., Midland, Mich. (speaking).

Process Instrumentation and Control

Earl W. Prince, Champion Paper & Fibre Co., Hamilton, Ohio, Chairman **J. K. Powell**, Bowaters Southern Corp., Calhoun, Tenn., **D. P. Michel**, The Bauer Bros. Co., Springfield, Ohio.

differential gear drive developed by B-C; the first of these units was installed last spring at Sonoco Products, Hartsville, S. C.

The B-C differential drive—in five sizes ranging from 150 to 1200 hp—delivers synchronous speed regulation and positive draw control. It is designed to synchronize the speed of the output shaft with speed of the line shaft, except while making draw adjustments. A line shaft, running through the base, drives a spiral bevel gear and pinion reduction; providing right angle transition from line shaft to machine intake shaft. A helical double-reduction, rotating, cage-type differential inside the outer housing can be driven forward or backward at slow speeds by a hydraulic motor to obtain desired draw. Rotating the cage in direction of the output shaft rotation increases output speed. To reduce output speed the cage is rotated in the opposite direction. An adjustable fluid pump provides power for the hydraulic motor.

The drive gets its synchronous motor characteristics from a hydraulic tachometer motor, with feedback control, geared into the cage gear ring. This tachometer motor adjusts the stroke of the fluid pump to maintain differential gear output speed in constant relationship with the line shaft. A tachometer pump, driven from the line shaft, has adjustable piston stroke and displacement. The operator varies this displacement by push-button controls. This adjusts displacement of the fluid pump which, in turn, adjusts the hydraulic motor which changes speed of the differential cage and output shaft.

Glimpsed on Woods Tour

Ed Hopper, J. F. Pritchard Co., Pittsburgh, and **James Kearney**, Ebasco Services, New York City.

G. Garnet Eastwood, Kimberly-Clark., Neenah, and **John M. MacBrayne**, Union Bag-Camp Paper Corp., Savannah.

James Finsen, plant engineer, Ketchikan Pulp Co., with **Mrs. Finsen.**

Progress in Combatting Corrosion

Edward H. Hopper, veteran member of TAPPI's corrosion committee, for the second year reviews corrosion session of conference

The TAPPI Corrosion Committee presented a program of five excellent papers July 30 at the Portland, Oregon meeting under the chairmanship of Lou Dela Grange of West Virginia Pulp and Paper Co.

Anodic Protection

"Development of Anodic Protection for Application to Alkaline Pulping Digesters" by Dr. Walter A. Mueller, Pulp and Paper Research Institute of Canada, was a continuation of previous research work presented at an earlier meeting and carried it up to the present point where anode protection is being applied to a commercial digester 50 ft. high by 10 ft. diameter.

This work indicates that the most active corrosion in an alkaline digester is at the beginning of a cook and may continue for two hours without anodic protection. The amount of low voltage-high ampere d.c. current required to overcome corrosion varies with different cooking liquors. Dr. Mueller found that by using 700 amperes for 55 minutes, the digester shell became passive and the current could be reduced to 100 amps. for the balance of the cook without reactivation.

Dr. Mueller stated that anodic protection can be used on stationary digesters when oxidized black liquor is used for makeup but that with non-oxidized black liquor, anodic protection is advisable only where the black liquor addition exceeds a minimum value. The following methods were listed for reducing current requirements:

1. Increasing quantity of black liquor added
2. Use of direct steaming rather than indirect
3. Use of oxidized black liquor in place of non-oxidized
4. Reduction in concentration of un-hydrolyzed sodium sulfide
5. Increase in degree of overscaling

The results of this work will be watched with interest as it may be the answer to preventing corrosion rather than just controlling it.

The other extreme, cathodic protection, has also reduced corrosion rates considerably on six digesters. This work was initiated by E. W. Keith of Penobscot Chemical Fibre Co.

Corrosion Records of Evaporators

"Experience in Evaporator Corrosion" by H. E. Jacoby and H. G. Lankenau of Chicago Bridge and Iron Co. reported on good and bad life histories of pulp mill black liquor evaporators.

In Mill "A" the multiple effect evaporator installed in 1946 is still in service with a minimum of replacement parts required. This evaporator received only one acid wash; about 15% sulfuric acid inhibited with salt cake.

Mill "B" was put into service in June, 1955. This mill, using a synthetic sulfide from its chemical plant as a source of sulfidity, has had a history of constant replacement of carbon steel with 316 and 304 stainless steel.

The authors reported severe corrosion in mills producing dissolving grade pulp which necessitated use of type 304 stainless clad and solid throughout. They also reported that "boil-out practice" in many mills is getting away from the use of hydrochloric acid and that some mills are taking steps to eliminate scale forming elements.

Pictures illustrated failure of type 304 stainless steel evaporator tubes through attack on the welds. The authors said this failure would not

have occurred if the tubes had received a sufficient amount of cold work and proper anneal following the welding operation. They further stress that proper design must consider corrosion due to: 1, Normal liquor; 2, Boil-out liquor; 3, Improper materials of construction; 4, Mechanical design.

"Wonder" Metals in Bleach Plants

"Corrosion Test Experience in Pulp Bleaching Processes" was presented by J. E. Wilkinson of Champion Paper & Fibre Co., Canton, N. C., and listed corrosion data on tests run in nine locations in pulp bleaching process areas. These include chlorination, hypochlorite bleaching chlorine dioxide bleaching and chlorine dioxide generation. The tests were run on conventional corrosion spool specimens. To check on the very important problem of attack by crevice type corrosion, a modification of the normal test was used.

These tests show the excellent corrosion resistance of the "wonder metals," tantalum and titanium, to the very severe problems introduced by chlorine dioxide bleaching. They also confirm the good service life of titanium to date. However, zirconium failed to show satisfactory corrosion resistance. Results on the more common corrosion resistant alloys show good to poor resistance.

The author said that results of corrosion tests may not hold true where the same materials are put into actual operation. This again indicates that all such test data must be used with discretion. All factors should be considered. These include examination of edges of coupons for preferential attack, tests for stress corrosion, and the effect of fabrication and welding.

Moly in Magnesia Base Mill

J. E. Finsen, Ketchikan Pulp Co., Ketchikan, Alaska, discussed "Controlling Corrosion in a Modern Magnesia Base Sulfite Mill." He reviewed the corrosion problems in operating the new MgO plant and recovery system. It was found that the chlorine ion introduced through the pulping of salt water soaked logs aggravated corrosion greatly. The standard AISI type 316 stainless steel was not sufficiently corrosion resistant for the conditions. Those heats of stainless 316 with 1.98 to 2.36% molybdenum were unsatisfactory and corrosion resistance improved with increased moly. It was decided to set the moly content at 2.75% minimum.

The author said that stainless steel suffered from all the well known causes of stainless corrosion aggravated by the presence of chlorides and that some of these have been corrected by design, operating changes and materials of construction.

Digester Attacks Lessen

A report by Harold Canavan of Mutual Boiler and Machinery Insurance Co., Waltham, Mass., on the "Current Status of Alkaline Digester Corrosion as Reported by Regional Digester Groups," continues the compilation of data supplied by the mills on the digester corrosion questionnaire. The results indicate that while attack on carbon steel alkaline digesters is still serious in some mills, the general trend of attack is lessening.

The author reports that the average current corrosion rate for carbon steel digesters based on the median has decreased from 28.0 mils to 21.5 mils per year and in the critical area from 60 mils to 53 mils per year. The critical area is still in the middle shell but there are increasing signs that critical areas in the lower shell are increasing. The author says this may be due to stainless overlay protection of the middle and upper shells with transfer to the lower areas. Attack on Inconel and stainless lined or clad digesters is low as compared with carbon steel.

Opportunity to Cut Costs

The program was well received and attendance good. The variety of papers shows that the corrosion committee is getting away from the single theme of kraft digester corrosion and into the various branches of corrosion plaguing the entire pulp and paper industry. This is an advance in the right direction. This field probably presents the greatest opportunity for the industry to reduce their costs through decreased replacement of equipment, lowered maintenance costs, and less downtime.

Good Fare at Process Control Session

G. Garnet Eastwood, instrument engineer, Kimberly-Clark Corp., authors this special commentary on discussions at Portland

The Process Instrumentation and Control Committee continues to gain momentum in popularity at sessions and presentation of papers, under the guidance of Jim Powell of Bowaters Southern as chairman. At the Portland meeting, two papers and a panel discussion proved to be good fare.

Automatic Refining Control

D. P. Michel of Bauer Bros. showed another important link in the march toward the completely automatic mill. The couch vacuum is an indication of the amount of refining of the stock. Although not a direct measurement, it can be used to control refining. It is essentially a sample-and-step type due to the long time lag. This is done by using an hydraulic piston to control the setting of the refiner.

The results show a higher and more uniform quality of paper and improved overall efficiency. Slides showed the control set-up and mechanism for refiner control. Questions showed a marked interest in the subject. The operators are beginning to accept these controls, which is a big step forward.

Control of Weight and Moisture

Bruce W. Smith of Curtiss-Wright gave a good long look at present use and future possible applications of Beta gauges as tools for the better quality production of paper and allied products. Advantages of scanning systems were presented with emphasis on across-machine profile information. Along with the Beta gauge, there is available a unit for measuring moisture, which also scans integrally and presents the difference as the true basis weight of the paper.

The installation on a machine will depend on the data required from it, the speed of the machine, and other factors. Some will require more than one unit to get differential information. They can be used as controllers with the necessary accompanying equipment. These new developments are always of wide interest and the industry is eager to hear of successful installations. We can look forward to the ultimate use—coat weight measurement.

Instrumentation for ClO_2

A panel discussion under the chairmanship of G. L. Harman of Bailey Meter, led off with a discussion of instrumentation using the Solvay process by John H. Dunkak of Puget Sound Pulp & Timber. The reactors are plastic lined steel. Flows are measured with differential pressure cells and accuracies of plus or minus 2% are claimed. The use of PVC for orifice plates is quite novel and new for temperature wells. Time lag is said to be not excessive. A glass cloth filter had to be used to keep dirt out of the

small orifices for the flow measurements.

The system is interlocked to stop chemical flow on air failure or other abnormal dangerous conditions.

L. Lundberg of Lundberg Associates explained instrumentation on the Mathieson process. High temperature or high pressures act to cut off the chemical flow in this process, the latter being preferred due to speed at detection. Titanium wells for temperature bulbs are preferred due to (a) added life and (b) greater safety over PVC. A slide showing the process layout and instrumentation gave a very good picture of the equipment involved.

I believe that more time could have been given to the question period, as this again proved the wide interest in this subject. We would like to see more time allotted to instrumentation, but in fairness to other groups, this would be difficult.

Peddlers Initiate Harrison In Great Clatter

Waiting Room No. 1 (Portland, Ore.), International Brotherhood of Migratory Peddlers, did a professional-like job staging an uproarious playlet, "The Start-Up," at the Wake-Em-Up Breakfast of the Engineering Conference. At least a dozen rehearsals with a pro coach and script writer aided the 16 actors and eight stagehands, all members of IBMP, in putting on one of the funniest and best such shows.

Tom Scarfone, as a gruff general supt., was the star. The climax was the initiation of Dr. Ward D. Harrison, vice pres. of Riegel Paper Corp. and president of TAPPI, as an honorary member.

As a prologue, a group of members sang their song: "P is for the peanuts that you pay us; E is for the eggs we have to dodge; the D's are for the duties which dismay us; L is for our loyal little lodge; E is for the energy we're known for; R is for the rubbish that we sell. Put them all together, they spell peddler, the brotherhood we love so well." Also their yell: "L-S-M-F-P! L-S-M-F-P! Lousy salesmen, mighty fine peddlers! Lousy salesmen, mighty fine peddlers! The finest bunch you ever saw! Brotherhood of Peddlers, rah, rah, rah!" This was led by the president of IBMP, Jack Ayres.

A formidable-appearing paper machine, with chicken-wire Fourdrinier, paneled hood, half a dozen dryer rolls, etc., originally built by Sid Drew and Ben Natwick, was the main prop. Machinetender Tom "Windy" James, Backtender Fred Ihlenburg, Machine Hand Russ Goodwillie, Janitor Don Hartel, Technical Man Bob Smythe and Plant Engineer Vic Risley go through a lot of banter and horseplay, which includes poking fun at the engineer, sitting dreamily off to the side with his slide room, and the technical man. At one point they inspect tissue from a "little mill at Chester, Pa." (which is 9 pt. corrugating), a coated sheet from Consolidated (roofing paper), some "really softened up facial from Camas" (sandpaper), paperboard from Longfibre (a shower curtain) and rayon pulp (rayon panties). An Indian in full regalia "from Potlatch"—Don Tourangeau—is hired as forestry engineer.

In top hats and cutaways, the board of directors appeared, led by Chairman Burke Morden (Mr. Clayfobb) and they proceeded to interview Dr. Harrison for a job as supt. The latter came on stage holding a poolroom cue, and when he tried to start up the machine, it fell apart in a great clatter with smoke belching all over the stage.

Peddler Performers

(From left) **Bob Smythe,** who played piano for peddlers' song and took role of technical man in "The Start-Up"; **Ray Smythe,** a board of director member and originator and creator of many peddlers' shows in past years; **Tom Scarfone,** the supt.; **Tom James,** machinetender; **Burke Morden,** chairman of the board; **Doug Armstrong,** general chairman of peddler's breakfast party.

Vic Risley, plant engineer; **Fred Ihlenburg,** backtender; **Frank Lemma,** board member; **Russ Goodwillie,** machine hand; **Jack Gilberg,** board member; **Ben Spaulding,** board member; **Walter Salmonson,** board member.

Committee Credited For Success of the Big 13th

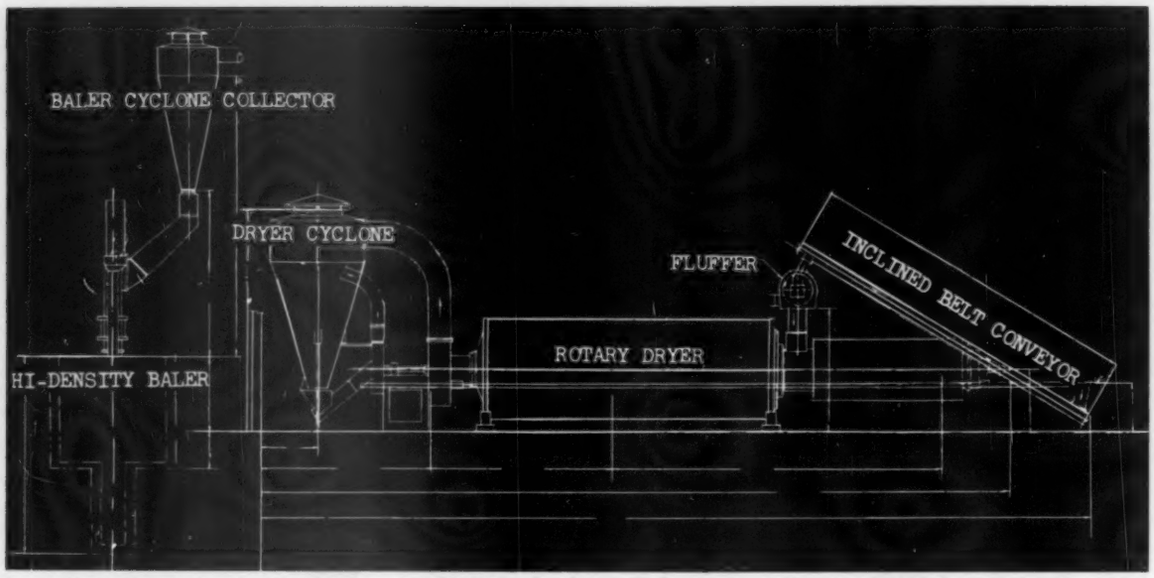
Jack M. Wilcox, mgr. of the process equipment division, Electric Steel Foundry Co., was not only general chairman of the hard working committee which staged the first western Engineering Conference but he was toastmaster of the banquet.

A philosopher-humorist, William H. Gove, v.p. of E.M.C. Recording Corp., St. Paul, Minn, was the only speechmaker

Robert H. Smythe, of Ray Smythe Co., was convention treasurer, Miss Kay Fralick, secy. to Burke Morden, pres. of Morden Machines Co., was convention secy. and in charge of printing. Wayne Mitchell, Link-Belt Co., was in charge of registration and J. M. McCulloch, Pennsalt, was in direct charge of housing for a meeting, which despite many handicaps, brought out close to 800 persons, including 50 latecomers for the banquet.

John Shaffer, Reliance Electric; Paul M. Henry, the Flox Co.; Dar Johnson, Esco; Nick Boylon and George Schroeder, Crown Z.; Virg Sutherland, Longfibre; Gordon Petrie, Black-Clawson; Mrs. Blake Honeyman, Morden Machines, Dean Brosche, Corn Products; John Ayers, DuPont, and Doug Armstrong, Vanderbilt Co., held important committee responsibilities.

Lawrence K. Smith, vice pres., Miller Freeman Publications, **Albert W. Wilson,** editor, and **Louis H. Blackerby,** Western editor, both of PULP & PAPER, "covered" the Engineering Conference in Portland, Ore., for PULP & PAPER.



NEW BAUER-BALE SYSTEM at Halifax permits . . .

Flash Drying of Groundwood

With resulting economies in handling, shipping, storage, better customer acceptance and wider market range

• Halifax Power & Pulp Ltd., at Sheet Harbour, N.S., is successfully operating the first Bauer-Bale system on flash drying of groundwood pulp. Previously Halifax had used pulp sheet machines to get about 56% air-dry. Supplementing the old equipment with the new it now gets 96% a.d.

Results:

1—Shipping costs were reduced because of lowered moisture content. By shipping a 500-lb. bale with the old system, with an approximate b.d. of 50%, about 250 lbs. would be water.

2—Storage space savings. A ton of 50% b.d. groundwood baled pulp takes up about 105 cu. ft.; the same pulp Bauer-Bale processed, will take up 60 cu. ft.

3—Pulp can be shipped to more distant markets, can be stored in warm climates. This is an extremely important factor.

4—Reduced handling benefits both Halifax and customers.

5—Pulp appears to be more friable; disperses more readily than wet laps.

How System Operates

The system, which went into operation last Dec. 21, basically is the mechanical dewatering of pulp, fluffing, further dewatering by heat to approximately 87-88% solids and baling in fluffed form.

In detail, groundwood pulp is dewatered mechanically on the existing pulp sheeters trimming 120-in. The sheet is cut into 8 by 10-in. sizes and drops onto a horizontal screw conveyor. Action of the screws breaks up and initiates fluffing action. Pulp discharges onto a 40-ft. long cleated belt conveyor which carries the pulp on a 30° incline to the fluffer.

The fluffer is a Bauer No. 245 single disc refiner unit with small devil-toothed plates. Fluffer rpm is 1,200 and plate clearance is .150 to .200-in. No refining action takes place. Pulp is fed into the eye of the disc by a screw feeder. Fluffed pulp is gravity fed to the Heil rotary dryer, into the hot air stream at the juncture between drum and furnace.

This dryer is direct-fired, heated by the furnace gases; there is no heat exchange. The rotating drum has three telescoping cylinders with compound showering flights. Results are to provide different velocities and different heats in each cylinder to accommodate changing evaporation rates as the moisture content of the pulp drops.

Savings in Fuel

Interesting is that Halifax effects a saving on fuel oil by using Bunker "C" oil, delivered by boat in lots of 600,000 gal. The oil is pre-heated to 235° and fed to the burner under pressure where atomization takes place. Dryer inlet temperature is 700 to 710°F.; outlet is 175° to 200°F. Approximately 17 U.S. gal. of oil are burned per air-dried ton of pulp.

Pulp is then pneumatically blown from the furnace to the cyclone. Here furnace gases and moist air are separated from the pulp. The pulp is then picked up from a hopper by a fan and carried through a blow-pipe about 120-ft. long, 13-in. dia., to the cyclone collector which gravity feeds the tramping section of the Lummus Hi-Density baler.

Baler Operation

The baler has two bins with floating bottoms that rotate on a center post, and three 14-in. single acting rams. The tramping section is a chain driven unit powered by a 30 hp motor which is completely actuated and

Chain of Equipment

8 four-pocket grinders
1 Reener coarse screen
2 Cowan rotary screens
1 Sprout-Waldron 36-2 refiner
9 primary Vorject Cleaners and 2 secondary
6 thickeners
3 (120-in.) pulp machines
1 Bauer No. 245 fluffer
1 Heil rotary dryer
1 Lummus Hi-Density press plus conveyors.

controlled automatically.

To start the tramping cycle, the feeder paddle which is located at the lower exit of the feed chute feeds pulp into the tramper. Bale weight is controlled by tramper strokes. The number of strokes varies with weight and density of the bale to be produced.

The tramper stops when it draws a certain amount of current and a signal alerts the operator. He manually engages the power indexing system which indexes the bins 180° to begin bale pressing. Ram travel is to a pressure of 2,000 lbs.; takes about 100 seconds.

After indexing the full bin is then over the rams and the empty one under the collector. Pulp is compressed from the bottom; bale is extracted by opening doors at the top of the bin and the baler is then ready to repeat its cycle. Time cycle is 5 minutes; getting a 680 lb. bale. This weight gives Halifax three bales to the air-dry ton.

When the desired pressure is reached, the baler doors are manually opened and bales are tied at four positions using ¾-in. by .035 steel strapping. Halifax uses standard unbleached sulfite wrappers, prefers the wrapped bales because of ease of handling and prevents crumbing. Bales are also easier handled out of the press and into the boat or rail car.

Start-Up Troubles Solved

Dusting or loss of fines occurred at the two cyclone collectors and was solved by balancing out the cyclones, by adjusting the caps. At the baler, the action of the tramper was like an air pump blowing fines through every possible opening. This was solved by sealing the tramper as much as possible, changing the programming of the tramper (slowing it down), and the installation of a simple scavenger system, a vacuum cleaner at strategic points around the baler. Fines and spilt pulp that it picks up are blown back to the mill and introduced into the white water system.

Another problem was oil contamination. Halifax changed the furnace nozzle to give better atomization; also added another course of fire brick at the furnace throat to restrict air flow.

The newly formed bale has a density of 57 lbs./cu. ft. and tieing off the bale at this density was a problem with springback. A heavy strapping with pneumatic tools solved the problem.

Halifax likes the system, in addition to the cost saving features. The refiner, it says, is the best approach to the fluffing problem. Other methods have been known to make fish-eyes, but Halifax hasn't had this kind of trouble.

As the mill is located on tidewater and is able to produce and ship throughout the year, it is now feasible to ship the dry groundwood to all parts of the world. The Gottesman Central National Organization, New York, is exclusive sales representative.

Other advantages of the direct-fired dryer, cited by Vice President Robert Sternberger:

1—Fuel economy. Better than a heat exchanger.

2—No warm up necessary.

3—Pulp is dried in a relatively inert atmosphere due to its being carried through the dryer in the furnace gases and because the oxygen has been mostly consumed from these gases. Thus, there is little oxygen to oxidize the pulp.

4—There is no danger of contaminating the pulp with proper combustion.

Power Requirements

Mechanical Dewatering: 1.25% to 50% b.d.; 3.08 hp days/ton
Conveying: .46 hp days/ton
Fluffing: .69 hp days/ton
Drying: 102 hp days/ton
Blowing pulp to baler: .17 hp days/ton
Baling: 1.71 hy days/ton
Total hp days/a.d. ton: 7.13
Dryer heat requirements: 2,550,000 btu's per a.d ton

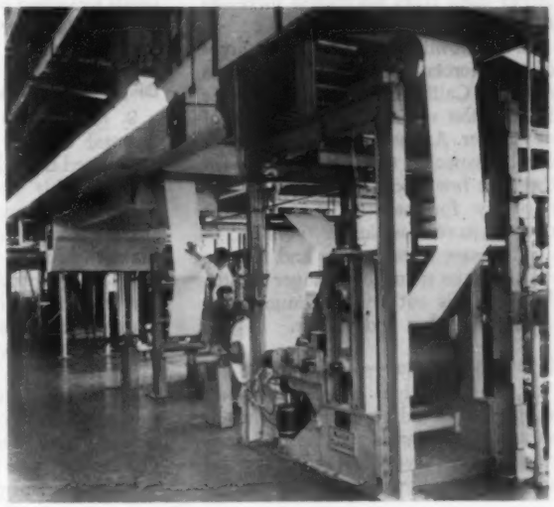
Versatile Pilot Plant Coater Helps Evaluate Methods

The Koppers-Dilts coater shown here was unveiled recently by the Koppers Plastics Division of the Koppers Co., in connection with a new latex, Dylex KCD-85.

The coater, designed cooperatively by Koppers and Dilts Division of the Black-Clawson Co., is extremely versatile, capable of duplicating almost any paper coating condition including transfer roll, offset gravure, KCM coater, size press, air knife, and trailing blade. It is located at Koppers' new development laboratories at Kobuta, Pa.

The 20-in. trim machine has four rolls, can coat from 3 to 14 lbs./ream, at speeds up to 1500 fpm, can be modified for coating speeds up to 2,100 fpm. Metering rolls are 14-in., applicator roll 20-in.

For drying, there is a 40-ft. long hot air tunnel with a 25-ft. return pass. The new paper latex for use in clay coating formulations produces coatings with many of the characteristics of a cast coating, yet can be run on standard on-machine equipment at normal speeds, says H. C. Carlson, product manager of Koppers' chemicals and coating marketing dept. The new latex has produced coatings with a gloss rating as high as 97.



California Sets Pattern for Pulp Growth

State Pollution Control Board sees tremendous potential for more woodpulp facilities

• Market prospects indicate that by 1975 fast-growing California will be using 50% more pulp products than were produced in the entire Western region of U.S. in 1952. The state, containing 3.6% of the nation's commercial forest area, ranks second only to Oregon both in volume of standing timber and lumber production. But California is the 23rd state in installed pulp capacity.

Because future growth of northern California is vitally dependent on water and timber, a cooperative study sponsored by the State Water Pollution Control Board was undertaken to give intelligent consideration for discharging pulp mill wastes. These results have been published by the board as "Waste Treatment and Disposal Aspects to Development of California Pulp & Paper Resources."

This 100-page report is important because of long term plans for future pulp and paper mills in the state by Champion Paper & Fibre Co., and Fibreboard Paper Products with Simpson Timber Co., and others, and also growth plans of existing companies. It points out:

1. Significant increases in volume of timber cut in California are not likely. Future expansion of forest industries contributing to support of the state's population must come primarily from more intensive utilization rather than from additional increases in volume of timber cutting.

2. California has 17.3 million acres of commercial forest land, mostly in northern California, and includes some 20% of the nation's total volume of sawtimber. Annual cut in these forests can be expected to exceed growth for the next few decades because of the necessity for harvesting mature or over mature sawtimber volume to avoid losses from insects and disease and to make room for younger stands. Most of this cut will continue to be used for lumber and veneer.

Principal Sources—Residues

3. The principal sources of wood supply for initial expansion of the industry in California will be mill residues from sawmills and plywood plants and residual material formerly left in the woods after logging.

4. All of the commercial softwood and several hardwood species found in California are suitable for pulping by presently used commercial processes.

5. Likely applicable processes for pulp—groundwood, mechanical, sulfate, semichemical.

6. From the viewpoint of fiber resources alone, there is a potential for an increase in pulp production from the present level of 521 tons per day to approximately 6,000 tons. (Unused coarse mill residues to represent 36%, coarse mill residues now used for fuel 9%, logging residue 24%, cutting in timber stands 31%).

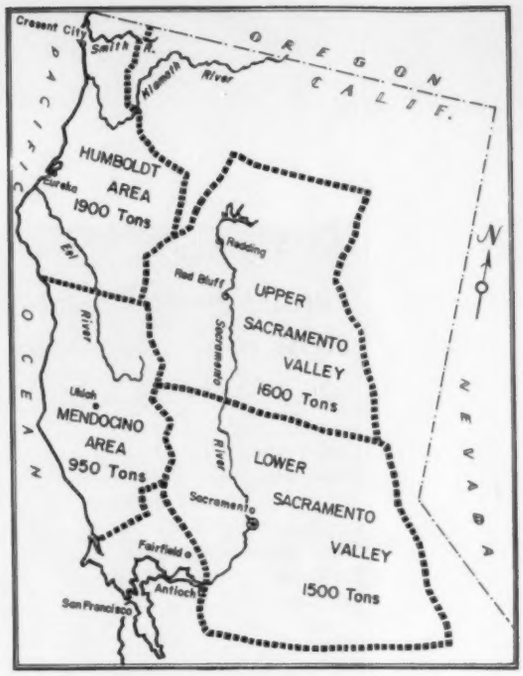
7. The estimated increase in potential pulp capacity in the principal timbered areas of northern California is distributed as follows: Humboldt area 1,900 tons per day, Mendocino area 950 tons per day, upper Sacramento Valley 1,600 tons per day, lower Sacramento Valley 1,550 tons per day.

8. Local development of dams, reservoirs, and of appurtenant works together with major hydraulic works contemplated by the California Water Plan in the Sacramento River basin will provide sufficient water for all foreseeable beneficial uses. The estimated annual runoff in north coastal streams is adequate to support local needs including potential requirements for process water by the pulp and paper industry.

Disposal to Ocean in North

9. In the north coastal region, waste disposal directly to ocean waters is considered desirable. Specific locations meeting this requirement and for which the adequate data is available: Smith River near Crescent City, Klamath River near Klamath, Eel River near Scotia. In the absence of flow regulation by storage only the Klamath River site appears feasible from the standpoint of adequacy of water supply.

10. Adequate water supply is available at many locations in the Sacramento Valley along the main stream. The feasibility of mill location appears to be dependent primarily from waste disposal considerations.



THESE RIVERS ARE OKAY for mills, according to California Water Pollution Control Board.

11. The potential development of the pulp and paper industry in California is greatly dependent on the waste assimilative capacity of natural receiving waters such as streams, estuaries and bays, ground waters, and the ocean.

About half of the report is devoted to pollution control in relation to beneficial use of receiving waters and assimilative capacity of same. Although estimates are given on potentially developable fiber tonnage, estimated pulp tonnage which could be developed in terms of waste assimilative capacity is not stated. In conclusion the report states, "Information has been presented, however, which would enable the interested reader to examine many of the myriad combinations of waste and receiving waters in greater detail if he so desires."

New Carpenter Corrosion Lab To Aid Selection of Materials

The Carpenter Steel Co., Reading, Pa., has opened a new corrosion research laboratory that introduces important new means of accurately determining the corrosion rate on metals used for pulp and paper process equipment.

Its findings will aid in selecting materials for sulfite liquor coolers, chlorine dioxide heaters, pulp digesters and tubular heat exchangers.

The new facility enables the company to predict more precisely the area of usefulness of stainless and other corrosion resistant steels. In addition, it permits thorough examination of titanium, zircalloy, zirconium and nickel base alloys. Carpenter is currently investigating the behavior of several alloys in chlorine dioxide solutions.

Russia's Plans to Expand

Details direct from Moscow tell how reeds and straw are being used as well as wood

By V. GALASIEV

Director of USSR State Planning Committee's Dept. of Lumber, Paper and Woodworking Industry

● As I reported in my dispatch to PULP & PAPER in the recently published 1958 World Review Number, the Council of Ministers of the USSR has directed that Southern-growing reeds and also straw must be used to assist in increasing the output of the pulp and paper industry by 9% to 10% each year.

Among the new mills being built are two paperboard and two cellulose plants in the Kazakh SSR, Astrakahn, and one in Southern Ukraine.

Fast growing maculatura and other fiber species are to be used. This, despite the fact that the USSR has exceptionally vast timber reserves and exceeds the United States in lumber production. Most new construction using wood will be in the north and east of Russia. More paperboard use is planned and production of this grade will be increased four times in the next seven years.

USSR paper and paperboard production totaled 3,060,200 short tons in 1957, which compares with 1,073,600 tons in 1937 and 1,350,800 in 1947. The 1960 goal is 4,400,000 short tons.

Much Reed and Straw Available

According to incomplete data of a study made, total area in southern Russia of reed species of various varieties amounts to more than 4,000,000 hectares, with a total supply of approximately 35,000,000 tons a year. The annual yield of reed fluctuates from 6 to 14 tons and more per hectare. Reed is now used in extremely insignificant quantity.

With the development of virgin and idle land and the advance in agriculture, market surpluses of straw of about 10,000,000 to 11,000,000 tons a year are forming on a number of large state grain farms; these surpluses can and will be used successfully in cellulose and paper production.

The above figures on resources of annual plans show the large potentialities for the development of the cellulose and paper industry and its even geographical distribution throughout the USSR.

In the vicinity of large cities and population centers it is planned to build several paperboard factories that will use waste as raw material.

Extensive Trade in Pulp

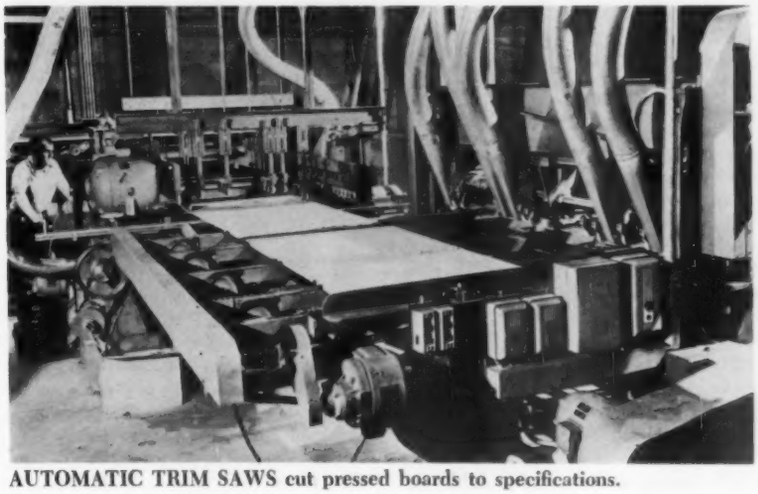
The USSR carries on an extensive trade with many countries in cellulose and paper products and equipment. It exported 200,000 tons of cellulose in 1957, as against 180,000 tons in 1956. Cellulose is supplied chiefly to Britain, France, Italy and West Germany and to some extent to the people's democracies and other countries. At the same time the USSR imports a small quantity (82,000 tons) of viscose cellulose, primarily from Finland and Sweden.

Imports of paper and to some extent paperboard exceed exports by 68,000 tons (1957), Finland being the main supplier of paper and cellulose to the USSR. A trade agreement has been signed with Finland for the supply of certain types of papermaking equipment and individual units and parts needed to modernize existing machinery at Soviet enterprises. The USSR exports primarily newsprint to Hungary, China, India and other countries.

West Virginia Makes Flakeboard

West Virginia Pulp and Paper Co. believes that particle board or flakeboard will be a keen competitor with plywood. That's why David L. Luke, president, says the name "thriftwood" might be more applicable. West Virginia has a new plant at Tyrone, Pa. to produce 25 million sq. ft. a year.

The importance of this new product to Westvaco and its reasons for getting into this relatively new field for this 70-year-old company are explained by Mr. Luke: "We are bringing together our knowledge of process control and some of the fruits of research in by-products to make a uniform particle board. We are also bringing lignin out of the tree that made the pulpwood to put it back into the adhesive to improve the quality and cut the cost of particle board."

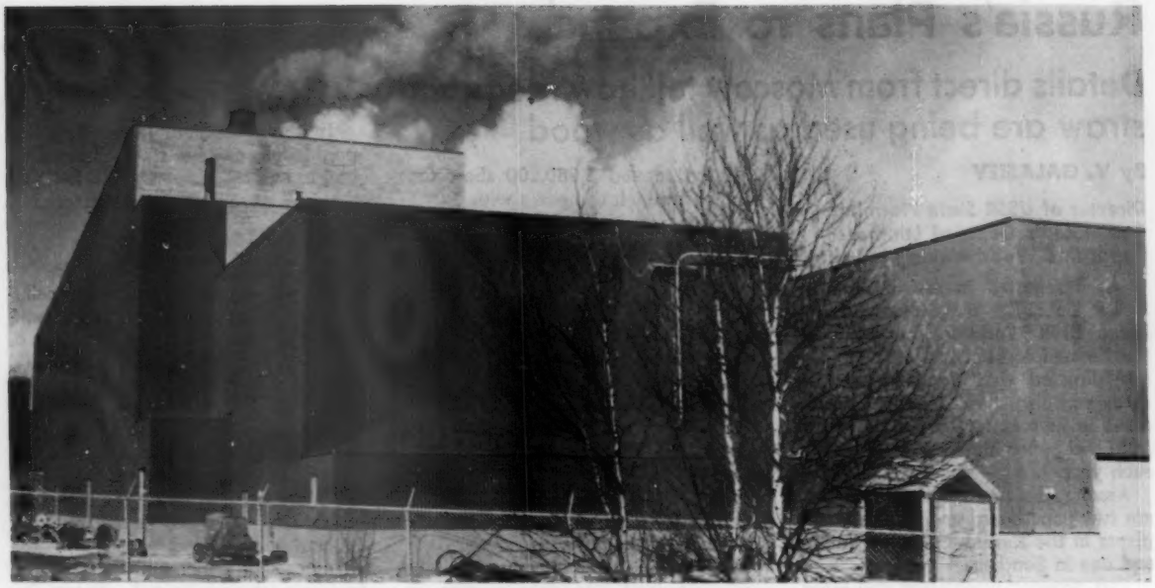


AUTOMATIC TRIM SAWS cut pressed boards to specifications.

As stressed in PULP & PAPER'S World Review, July 1958, particle board is the fastest growing of the "Cinderellas" in the world's woodpile of leftovers. The United States ranks second to W. Germany in the production of particle board. About 50 particle board plants are now in production in the U.S. with a capacity of nearly one billion sq. ft./year (based on ⅝ in. thickness equivalent).

Particle board is essentially a product consisting of machined wood particles, splinters, flakes and shavings of a controlled moisture content and size, bonded together with a synthetic resin adhesive into panel form under pressure and heat. Most extensive use is as furniture core, and stock for laminates and veneers.

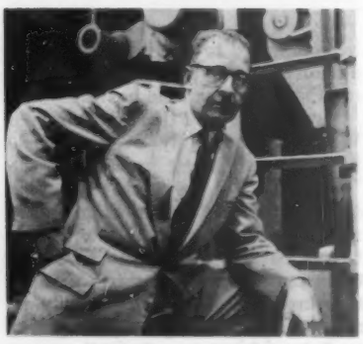
Wood purchases from tree farmers in the Tyrone area will be boosted from $2 million/year to $2.25 million. Division Manager J. Lynne Ferner says that Westvaco flakeboard differs from many other particle board in that it is made from virgin wood harvested to specifications.



GEARED FOR FUTURE EXPANSION is this new paper mill building at St. Croix Paper Co., Woodland, Maine. It houses new high speed newsprint machine.

Less Cost—Expansion Goal

at 50-year old St. Croix Paper Co., which moves into high speed and high quality newsprint production



Fales at St. Croix Since 1951

University of Maine educated (1935, b.s. in mechanical engineering) and Maine born (Thomaston), Henry W. Fales received most of his paper industry training with Scott Paper Co.

He began at the Chester, Pa. mill in 1941, then moved to the Glens Falls, N.Y. operation where he was plant engineer of the Marinette mill, then became mill mgr. in 1942. He moved to the Ft. Edward mill as plant engineer of both operations in 1945, then in 1948 was promoted to general supt.

In 1950 he joined Wood Flong as plant engineer and in 1951 came to St. Croix Paper Co. as assistant general mgr.

By HENRY W. FALES
Vice Pres. and Gen. Mgr., St. Croix Paper Co. (as told to PULP & PAPER)

• When we decided to buy a new paper machine, we were looking to make high speed news at high quality. Our present machines have a top range of 1250 fpm.

What appealed to us was the possibility of making more production of a higher quality and at the same time keeping our labor costs down. We decided to use as many automatic controls as possible so that we could put the process on as automatic a basis as possible and to keep labor at a minimum.

Another important point, the new machine was designed with the idea of being a three-roll machine. That is, three 62-in. or three 64-in. rolls, in line with new newspaper printing press widths.

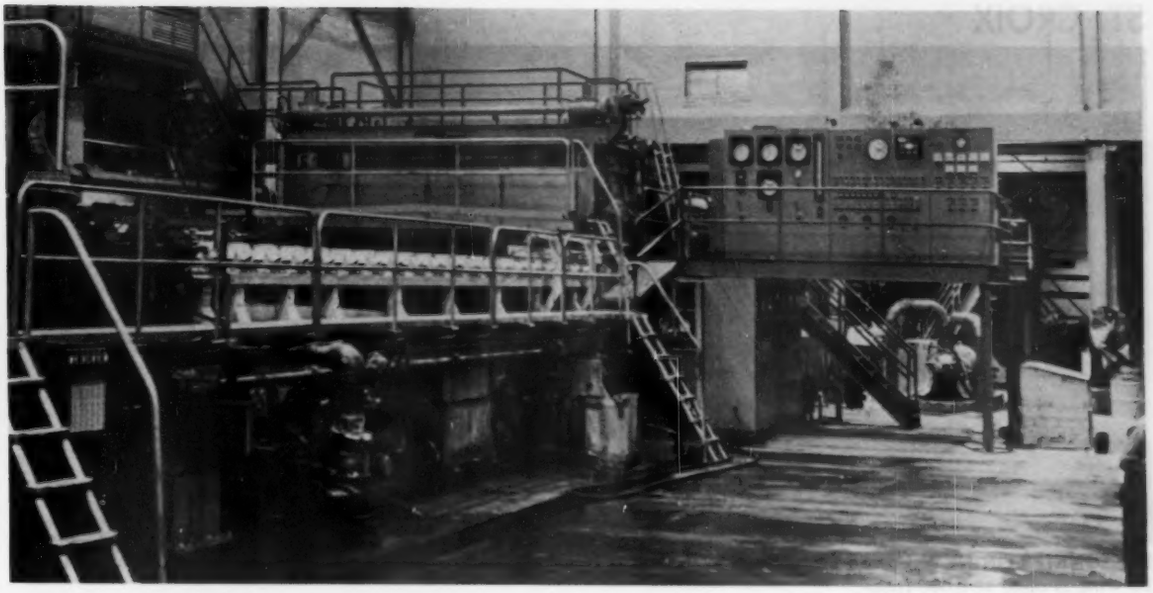
St. Croix newsprint is a large factor (some 100,000 tons a year) in the East and Midwest United States. No. 4 machine will increase our production by 33%.

The entire mill has been laid out with an idea for future expansion. The north and east walls of the new machine room were built of permanent brick construction. The south and west walls are of G-type, V-beam, Robertson Galbestos siding which can be removed for addition to existing facilities.

We also planned the mill so that the first floor, at millyard elevation, is the machine room basement for stock pumps, vacuum pumps, chests, etc.

A most important part of our picture are the woodlands. We are self-sufficient in our wood needs. We have some 600,000 acres within 50 miles of the mill, all self-perpetuating. Some 400,000 acres are in Maine, 200,000 in New Brunswick. The only thing we buy is coal, and repair material.

PULP & PAPER Thanks . . .
Mr. Fales and Everett Blackwell, St. Croix project engineer, for their assistance in the preparation of these articles. P&P twice trekked to this Downeast mill on Maine's coastline to take the pictures and gather the material presented on these pages.



THE FASTER YOU MAKE NEWSPRINT the more important it is that the practical papermaker has all the process variables at his fingertips. That's why . . .

Instrumentation is Key to Speed and Quality

St. Croix Paper Co. has many practical papermakers, craftsmen who use their senses to tell whether a sheet is too light or too heavy. None of the men assigned to work on the new machine had ever seen a high speed news machine before.

Reasoned the company, the faster the machine operates, the less likely is this craftsman going to be able to tell whether the sheet is light or not.

St. Croix wanted to give the men the necessary tools to do their jobs and wanted to supply each man with the necessary records, so that he could tell at a glance what happened on previous shifts.

From the main control panel (located on the flying bridge shown above) the papermaker can start all pumps connected with the start-up of the machine. He can put stock on and off, speed up or slow down. From this one location, he has control of the complete operation.

Underneath this bridge is the panel which supplies history such as couch vacuum, stuff box levels, pH, etc.

Machine Start-Up Successful

Here are some reasons why it was:

Color is ratioed to stock flow.

A control valve is used for proportioning. St. Croix decided upon this system because it can get a record of the total quantity of each furnish used and it integrates this flow so that each day it can calculate the amount of sulfite, groundwood and broke being supplied to the machine.

Two General Electric photoelectric relays, one positioned at the third press just before the sheet enters the dryers and one at the dry end are used to detect breaks. Warning horns are sounded when a break occurs.

Training at Neighboring Mill

Since the machine crews had never seen a high speed machine before, Great Northern Paper Co. cooperated so that the St. Croix machine crew could spend two weeks at the East Millinocket, Me., mill at Great Northern with their machine counterparts.

After this, the men were instructed in a classroom at St. Croix for two weeks. Here, they discussed the system, how it works and the entire set-up, start-up procedure, etc.

The crew then went into the machine room and pumped water through every line, adjusted all controls so that everyone would be familiar with all controls, all pieces of equipment before stock was put on the machine. Then the machine clothing was put on and the machine started up.

Groundwood and stock preparation crews had lectures and talks and went through the same mock start-up procedure. Every man knew the entire system before he started turning a valve or started a pump.

On Nov. 6, 1957 stock was first put on the wire. On November 12, paper was on the reel. St. Croix didn't lose a wire, dryer or press felt. In fact the first felt ran for two weeks. The first wire ran 16 days without trouble.

Says Vice President Henry Fales, "For boys who had never seen or operated a high speed machine before, they've done very well."

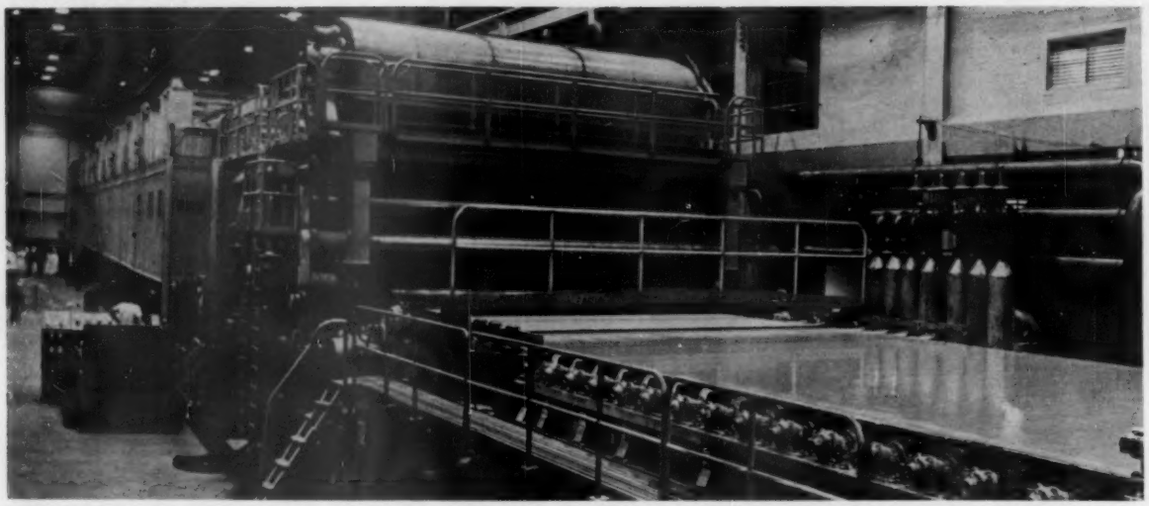
Completed St. Croix includes:

1. New grinder room, screen room, alterations in existing finishing room and additional equipment in sulfite mill.

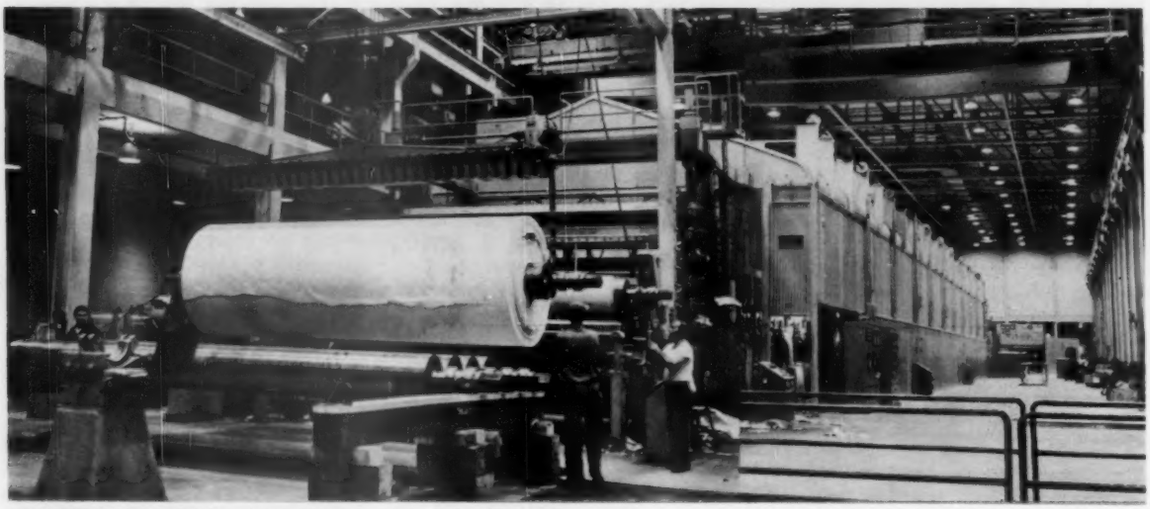
2. A new 206-in. Beloit newsprint paper machine designed to operate at 2,500 fpm.

3. New high pressure steam power plant including a 12,500 kw turbine generator and a 125,000 lb./hr. boiler unit, 875 psi operating pressure.

4. Two new 3400 kva generating units at Grand Falls hydro station.



DESIGNED FOR NEW PRESS PRINTING WIDTHS is No. 4 machine built by Beloit for St. Croix. Machine has 206-in. wire, is rated at 2,500 fpm.



MODERN, COMPACT AND WELL LIT with plenty of room for present operations and engineered for future expansion is machine room. Hood completely encloses dryers.

High Speed Newsprint Machine Ups Production

The new machine room at St. Croix is 412-ft. long by 80-ft. wide of structural steel and brick with one wall of Galbestos siding removable for future expansion. The 206 in. wire Beloit newsprint machine is designed to operate at 2500 fpm.

It is equipped with a pressure head box; air pressure maintaining constant stock level. Headless design rectifier rolls control flow of stock to the slice. The suction couch features patented drilling patterns and silencers which effectively reduce the noise level. The press section has an automatic suction pick-up, suction wringer press, first suction transfer press and second and third straight through suction presses.

The dryer section is divided into three sections. Each dryer is equipped with Beloit high speed condensate removers and duplex steamfits. The machine is provided with an open side design calender stack with 8 rolls. A heavy duty newsprint reel with 36 in. constant speed reel drum features air motor operated primary arms and secondary ways. The unwind stand has a water cooled diaphragm air brake equipped with automatic constant sheet tension control arrangement which has proved effective in rewinding of lightweight sheets.

The winder is a Beloit Model L type and designed for speeds up to 6000 fpm. It has 20 in. winder drums, motor driven rider roll, roll ejecting device and shaft puller.

The machine is driven by Beloit mechanical differential drive with Link-Belt PIV draw control.

The 1800 hp Worthington steam turbine is mounted in the lineshaft, connected with flexible couplings.

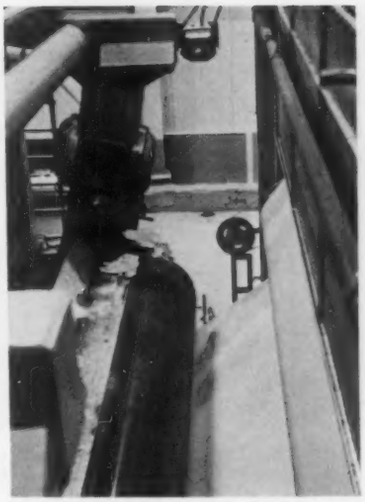
Reliance d.c. electric motor helper drives are used to drive suction couch roll, suction pick-up roll, suction wringer roll, first transfer press suction roll and first two wire return rolls. Power for these helper motors is supplied with current from two Reliance lineshaft generators.

A Ross-Midwest Fulton drainage system is used for condensate removal. Ross Engineering furnished the totally enclosed Ross-Hooper aluminum sliding panel hood, economizers and ventilating equipment.

A main control panel is on a flying bridge at the headbox from which all equipment of the machine can be operated.

Wet broke chest stock is pumped to an Impco saveall and repulper and then to the broke storage chest in the screen room basement. Broke is refined by an E. D. Jones Stockmaster refiner.

Rolls from the new No. 4 machine winder are conveyed to an existing Lambs-Gray Harbor automatic roll handling system. Other equipment in the machine room: Ingersoll-Rand Co.—stock and water pumps; Allis-Chalmers—electric motors; Chemical Linings—tile work; Impco—chest agitation; Hodgden Bros. and Portland Copper & Tank Co.—stainless steel pipe, etc.; Foxboro Co.—controls; Nash Engineering Co.—vacuum pumps; Worthington Corp.—air compressors; Farrel Birmingham—roll grinder; Northern Eng. Co.—machine room crane.



ELECTRIC EYE at third press and at dry end sounds warning at paper break.

Modernized Pulping and Power Facilities

Increased sulphite production for the new machine was provided by modernization of equipment in the present mill. Acid making was increased by installation of two new sulfur melters, a sulfur burner, G. D. Jenssen gas fan and a 180-ton Worthington water chiller.

Digester production has been substantially increased by addition of a pressure recovery tower, relief cooler, accumulator heat exchanger, and improved acid circulation. Additional screening capacity was added to take care of the increased production.

Suppliers of major equipment items include: Ingersoll-Rand Co.—stock and acid pumps; Allis-Chalmers—motors; Chemipulp Process, Inc.—digester fittings, recovery tower and miscellaneous fittings; Electric Steel Foundry Co.—relief cooler, accumulator heat exchanger; Minneapolis-Honeywell—instrumentation.

Boiler Output is 125,000 pph

The new high pressure steam plant is housed in a new steel-frame building with insulated Robertson Galbestos siding. The new boiler is a Babcock & Wilcox cyclone unit designed for 1000 lb. pressure (operating pressures: 875 lb.), 900° steam temperature, and output of 125,000 pph. The unit is primarily designed for burning coal with continuous ash removal; however, it is provided with oil burning equipment to operate at full load in case of emergency. Steam from the new boiler will be used to generate additional electric power by a new Allis-Chalmers 12,500 kw turbo-generator unit.

Other equipment suppliers in the steam plant include: Elliott Co.—condenser; Stephens-Adamson—coal handling; Westinghouse Electric Corp.—forced draft fan; Allen-Sherman-Hoff Co.—ash handling system; Connery Construction Co.—stack and breeching; Allis-Chalmers—motors; Ingersoll-Rand—boiler feed pumps; Bailey Meter Co.—combustion controls; Bancroft & Martin—structural and miscellaneous steel.

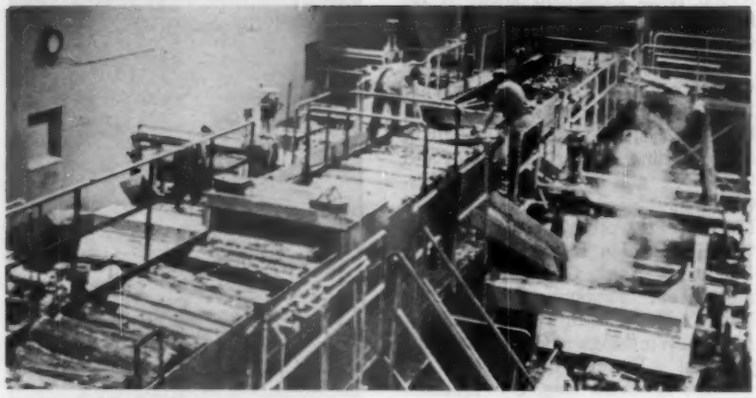
Hydro Station is Rebuilt

Power for mill operation is partially furnished from the Grand Falls hydro station about 12 miles above the mill on the St. Croix River. Three units with total capacity of about 10,000 kva were originally installed to generate 25 cycle power. Two of the old units were replaced by 3400 kva 60 cycle Elliott Co. units, connected to the original S. Morgan Smith water wheels. Bearing pedestals and many other parts of the original units were used in the new installation. Two new sub-stations were built, one at Grand Falls and one at the mill, plus switch gear equipment at each location, for transmission of the 60 cycle power.

Allis-Chalmers furnished transformers for the 60 cycle power conversion and also for primary power distribution at the mill. Unit substation transformers and unit-sub switch gear equipment was supplied by General Electric. Equipment erection was by Eichleay Corp., Pittsburgh, Chas. T. Main, Inc., Boston, consulted on design, supervised construction.

LEADING ST. CROIX TEAM into high speed news are (from left standing) Vincent DeFelice, control supt.; Charles Estey, paper supt.; Geoff Farmer, plant engineer; Creston Cox, groundwood supt.; Dan Hastings, electrical foreman; Jon Topolosky, steam engineer; Robert Hackett, sulfite supt. Seated from left are Everett Blackwell, project engineer; Henry Fales, vice president and general manager; George Fuller, mill supt. and Kenneth P. McDonough, personnel mgr.

ST. CROIX



NEW GRINDERS (5) are arranged in three lines. Each Great Northern Waterous type with low magazines has two showers. Stones are 65-in. dia. with 54-in. face.

Process Flow Stresses Strict Control

An entirely new grinder room of steel and brick construction is arranged for six Great Northern-Waterous grinders. The initial installation consists of five grinders in three lines, two grinders per line, with only one grinder on the third line. Stones are 67 x 54 in. and each line powered by 4000 hp Elliott electric motors.

Wood is supplied to a new block tank by series of chain and belt conveyors. A water trough takes the wood from the block tank to the grinders, then the groundwood stock, diluted with white water, flows through stock trough to the bull screens in the new screen room. One end of the grinder room is arranged for additional units in the future, by removing temporary siding. Other suppliers include: Ingersoll-Rand Co.—pumps for high and low pressure hydraulic system; Northern Eng. Co.—building crane, and Chemical Linings, Inc.—tile work.

The new screen room, adjacent to the grinder room and at the wet end of the paper machine room, of structural steel construction, is arranged for future expansion.

Stock from the grinders is screened on two Bird Machine Co. Jonsson bull screens, accepted stock going to the coarse screened stock chest. Rejects are sluiced to a Jeffrey hammermill, then pumped to a Haug refiner, then to the secondary groundwood screen. Coarse screened stock is pumped to three Montague Mark A Cowan primary screens, accepted stock going to five Bird Dirtecs, then to six Cowan deckers by Appleton Machine Co., to thickened stock storage chest. Rejects from primary screens are pumped to a Mark E Cowan secondary screen, accepted stock going to the coarse screened stock chest and rejects returned to system through the Haug refiner. Stock from the thickened stock storage chest is pumped to groundwood levelling chest in the new paper mill basement.

Suppliers of other equipment include: Ingersoll-Rand Co.—stock and water pumps; Chemical Linings, Inc. —tile work; Impco—chest agitation; Allis-Chalmers—electric motors.

Furnish consisting of groundwood, sulpfite and broke are pumped from their respective storage chests in the groundwood mill through DeZurik consistency controllers into separate levelling chests in machine room basement. From here sulfite and broke are proportioned to groundwood by a Foxboro stock proportioning system and pumped to the machine chest, then stock goes to a constant level headbox, the fan pump, then through Shartle Selectifier screens, and stream flow valve to Beloit pressure headbox. Dry end brake is handled by a Dilts Hydrapulper under the calender stack.

Expansion of DuPont Services with New Lab

A new $5 million laboratory is serving DuPont's electrochemical and pigments departments, at Chestnut Run near Wilmington, Del. Purpose: To step up customer service, boost evaluation of new products, create more sales. It is the fifth technical sales lab set up by DuPont at Chestnut Run. The new lab covers 81,000 sq. ft. with 150 rooms, labs, and demonstration areas and is staffed by 130.

The pigments laboratory (where Dr. Ray Bashford, trouble shooter for DuPont's pigments group, headquarters), includes special equipment to evaluate and test paper and paper coatings. Latest development to come from these facilities is the new chloride process for manufacturing titanium dioxide.

Of interest to pulp, paper and paperboard industry in the elchem labs are the peroxygens (hydrogen and sodium for bleaching) and the vinyls (polyvinyl alcohols and polyvinyl acetate emulsions).

In the peroxygen group, DuPont has two processes using peroxide in combination with other bleaching agents which produce results "previously thought impossible," said a spokesman. Several mills (Gould Paper Co., for example), are using a two-stage peroxide hydrosulfite bleach which is effective for both groundwood and a new type of mechanical pulp made from chips. A new kraft mill, DuPont says, is using five stages, with peroxide, hypochlorite and chlorine dioxide in series, producing a very strong bright pulp.

DuPont's Elvacet emulsions are grease and oil resistant, used as a greaseproof coating. DuPont plans to extend its range of use in paper for Elvacet and Elvanol by installing a multi-purpose coater.

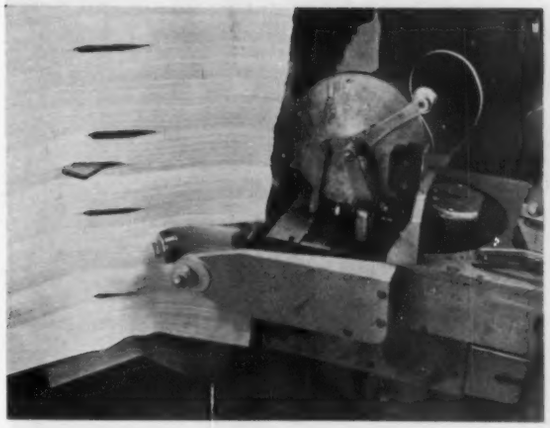
Scott Honors Seven Mills for Safety Records

Scott Paper Co. honored outstanding 1957 safety records of seven of its plants at a banquet at Media, Pa., May 21.

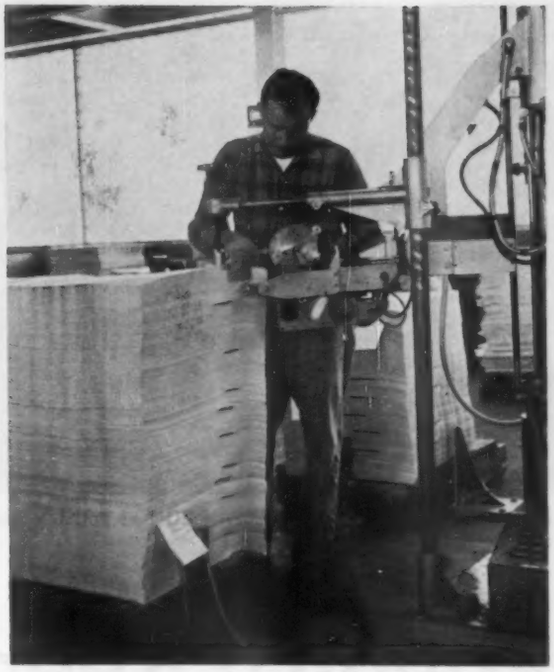
Honored guests were representatives of plants at Empire, Ore.; Marinette and Oronto Falls, Wis.; and Brunswick, Ga., each with perfect safety records during the year. The four plants employ some 2,000 people; totalled 6,766,922 man-hours without any lost-time accidents.

Scott mills at Chester, Pa., Fort Edward, N. Y., and Anacortes, Wash. were singled out for better than industry average records.

Scott Exec. Vice Pres. R. C. Matteer presented awards from both the National Safety Council and Scott Paper Co. Vice Presidents Paul C. Baldwin and Andrew J. Schroder, 2nd, and Industrial Relations Director Arthur F. Armstrong were speakers,



TIME: 9:12 a.m.—Spinning and rotating through this skidload of sheets is Vacuumatic sheet counter.



TIME: 9:15 a.m.—Counting head breezes through final ream, inserting ream markers at every 500 sheets.

Counts 'Em Fast

as 300 mills in Europe found out, 80 go in North American mills

• Byron Weston Co. at Dalton, Mass. is now counting an average of 750 reams/day on each of its two Vacuumatic sheet counters. This compares with about 325 reams/day for a good hand counter. Top production on one of these units at Byron Weston has been as high as 922 reams.

Some Tips on High Production

To get top production potential from the Vacuumatic, Plant Engineer Irving Witham suggests:

1. Don't place the unit against a wall. It is very important to be able to get at the counter with your paper loads. About a 100-sq. ft. area should be allowed for each machine.
2. The operator must be competent and service of paper to him must be prompt. If your operator is good and if he has well piled paper coming to him and if it is readily available, he can do a good 900 reams/day.
3. Corners of the skid should be straight and the pile should be in good condition.
4. One machine can service two loads. We have two bays with two angles mounted on the floor in each bay. The loads are positioned against these angles set at 90° to the counter.

How Counter Works

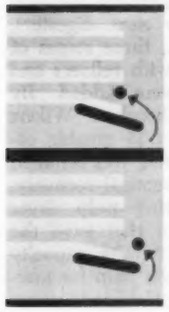
The principle of operation is good, says Engineer Witham. The counter has a counting head mounted on an upright bar with a suction blade and a rotating wiper pin.

The operator sets the head at the bottom edge of the pile and presses the starter button. The suction blade draws the edge of the sheet down, the wiper pin moves up and over the blade, draws the sheet away from the sheet above it and the suction blade moves into position on this next sheet.

At every 500 sheets, the counter automatically inserts a ream marker. In about three to four minutes, the skidload of 15-20 reams is counted.

The automatic counter is made by Vacuumatic Ltd., Windsor House, Kingsway, London, WC., W.C.2, England. Distributed in U.S. by Vacuumatic North America Inc.

How Automatic Sheet Counter Works

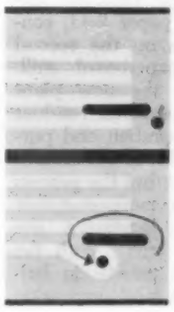


1
Machine starts. Corner of sheet is sucked on to suction blade by vacuum. Wiper pin starts rotating round blade.

2
Suction blade draws corner down away from others. Pin continues to rotate.

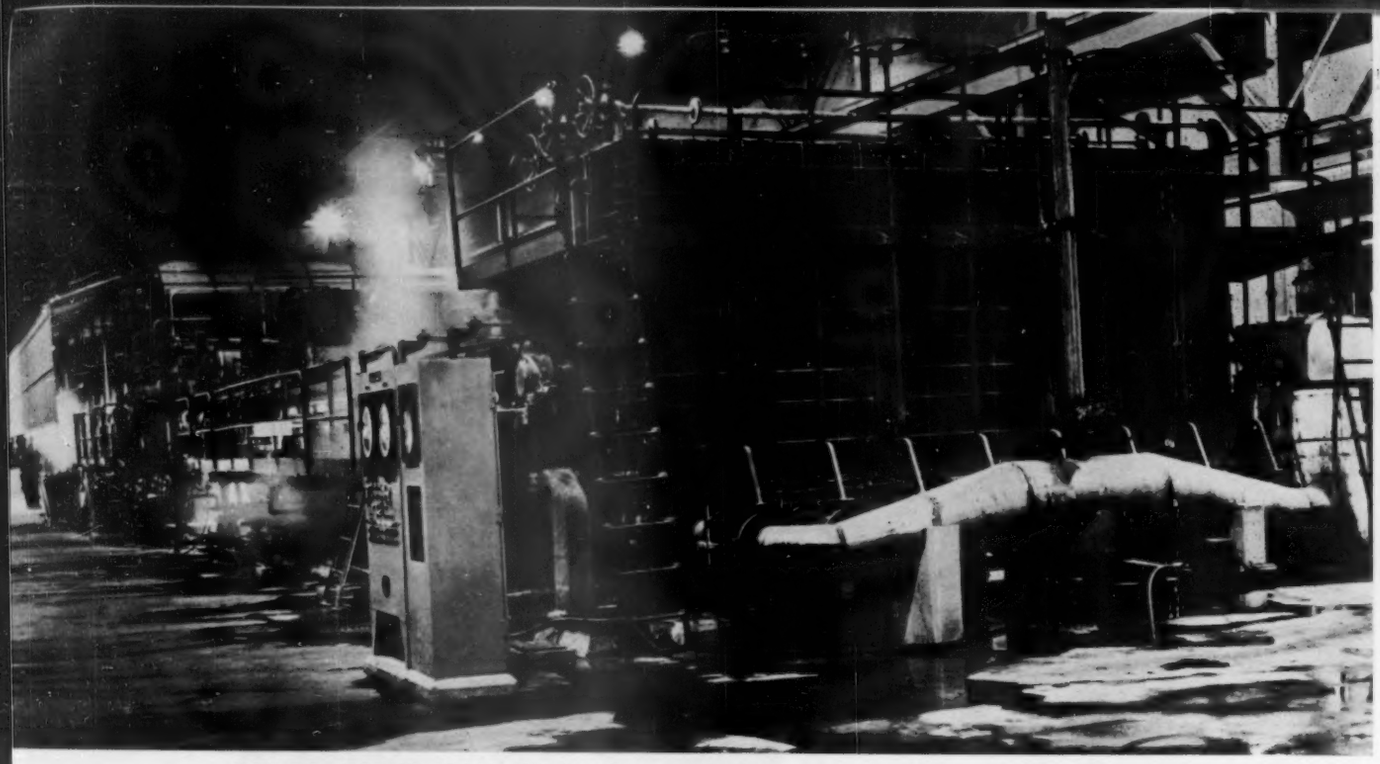
3
Suction blade is returning to horizontal. Wiper pin starts drawing corner off blade.

4
Suction blade almost horizontal. Wiper pin now carrying corner under blade.



5
Wiper pin has now carried first corner under blade, thus allowing next corner to be sucked down.

6
First sheet is now completely under blade. Cycle about to recommence for counting second corner.



KEY TO SECOND STAGE EXPANSION at Potlatch Forests is this 218-in. wide Black-Clawson Fourdrinier with primary and secondary inlets.

Potlatch Keeps Growing

Here is complete story—for first time—of this major Idaho producer's growth over the past eight years

● Potlatch Forests, Inc., Lewiston, Ida., has expanded its pulp and paper facilities for the second time.

On the surface this seems a logical trend in a state almost 35% forested, but much credit must go to ingenious pioneering in development of new methods for processing vast quantities of wood fiber from sawmill residue that otherwise would have been burned, and improving the products manufactured from it.

With the operation of a second pulp and paperboard mill with a rated capacity of 250 tons daily, total production of Potlatch Forests, Inc., pulp and paper division has grown from an original rated capacity of 160 to 525 tons daily.

Six years after the company entered the pulp and paper field, construction was begun on the second 250-ton capacity paperboard mill. Raw material from the new plant comes largely from sawmill residues of the company's operation and purchases from other mills of the area.

The company describes the process as "another step in more complete utilization without increasing the harvest by a single tree." With the harvest and annual growth in balance, this diversity and expansion solidifies the long-term stability of jobs and earnings while protecting the natural resources of the far west's famed "Inland Empire."

How PFI Was Created

Twenty-seven years ago, PFI was created by a merger of three lumber and timber companies. In the narrow panhandle of northern Idaho, PFI operates a sawmill, plywood and veneer plant and the two pulp and paperboard mills at Lewiston, while in three other northern Idaho towns the company has sawmills. In 1952, PFI purchased the former Fernstrom Paper Mills of Pomona, Calif., now Potlatch Forests, Inc., of Calif. Last year the company acquired the properties of Deer Park Pine Industries, Inc., Deer Park, Wash., and through a merger, those properties of Southern Lumber Co., Warren Ark., were made part of the company's operation. Additional acquisitions in the Southwest now provide resources sufficient for another pulp and paper mill in Arkansas some day.

PFI is now among the foremost forest products industries of the United States. In lumber alone, it is one of the top producers. A vast resource of fiber to draw upon, full utilization of this resource, and high quality products are cornerstones which will assure PFI a long-term operation.

The company's entry into the pulp and paper field came late in 1949 when construction for the original pulp and paper mill began. The first sheet of paper came over the new Fourdrinier machine Dec. 23, 1950. (An exclusive description with pictures in PULP & PAPER, Apr. 1951, page 54.)

Expansion Started Early

Less than a year later, work was started on an expansion at the mill. By the end of 1952, 30 dryers were added to the 196-in. Rice Barton Fourdrinier machine, raising the total to 74 dryers. Four new digesters, each of 4000 cu. ft., three stages of bleaching, together with refiners and pressure washers were added. By March, 1953, a Babcock & Wilcox recovery unit, with 50% greater capacity than the original, was installed to permit greater chemical recovery.

A Ross Engineering pulp dryer was another addition that gave the mill greater flexibility. Its capacity allows drying of excess pulp for market, or to supply the California paper

mill where napkins, fruit wrap, bond and lightweight papers are made.

An Allis-Chalmers lime kiln was added, the Dorr causticizing plant was doubled, and the capacity of the evaporator system, designed by the late James Rubush and built by Hydraulic Supply Co., was increased by one third. This brought the capacity to 325 tons a day. Paperboard off the machine was .008 to .028-in. thickness and designed for converters of food, butter and ice cream containers, paper cups and many other uses.

Meanwhile, the company started the third chlorine dioxide plant in the United States, adding this stage to pulp bleaching. It added a 40-ton Pandia continuous digester, and installed Sutherland pressure brown stock washers in the pulp mill.

Only Virgin Pulp Used

To appreciate what has happened in the Inland Empire, and particularly in Idaho, it is important to understand the wood resource. In a half-century of logging for lumber in this rugged, mountainous state, much of the timber had to be by-passed as unsuitable for lumber. Idaho's forests are white and ponderosa pine, white and Douglas fir, larch, spruce and cedar. These species are all usable in the manufacture of pulp. By combining its sawmill and logging operations with its pulp and paper mills, PFI realizes fuller utilization of timber from its Tree Farms by recovering slabs, edgings, trims, veneer cores from the sawmill and veneer plant, and wastes from logging operations.

A spectacular river drive, unique in the United States, brings 50 to 60 million feet of logs down the Clearwater river to Lewiston from river logging camps. This drive, directed by the colorful calk-sole shod "river rats," and featuring the time-honored "wannigans," rides the crest of each spring's high water. About 80 carloads of logs arrive each day by rail.

Not only PFI's own sawmills at Lewiston, Potlatch, Coeur d'Alene and Kamiah, Ida., and Deer Park, Wash., are making chips for the pulp and paper division, but mills of other companies as far away as Newport, Wash., to the north; Pendleton, Ore., to the west, and Emmett, Ida., to the south, as well as those independently-operated mills to the east on the Clearwater river drainage, have installed barking and chipping equipment.

Only 100% virgin pulp is used in manufacture of paperboard, resulting in a product with exceptional smoothness and improved printability. The folding boxboard and liner board made at PFI is helping supply a growing demand in the paperboard industry. The boxboard must pass rigid tests for superior quality and printing properties, since it is going into carriers for beverages, cereals, display boxes, automotive parts containers and many other uses.

Chipping and Barking Enlarged

The chipping and barking facilities at the Lewiston sawmill were enlarged to serve the pulp mill addition. In addition to the two original ring-type hydraulic barkers installed five years ago, there are two new pieces of wood preparation equipment. A two-arm Hansel Engineering hydraulic barker is mounted inside the wood room across a conveyor. An unusual chipper, the first manufactured by Hansel, is a 112-inch horizontal feed whole log chipper. It will take 40-ft. logs up to 24 in. diameter at a rate of 166 lineal fpm. It has eight knives and employs a downward discharge.

New No. 2 Pulp and Paper Mill

• The No. 2 pulp and paper mill parallels the No. 1 mill, with a common wall divider. The new plant, on the river side of the original, is 80 ft. wide. It is constructed of concrete with a crowned concrete block roof. There are no windows. Construction and contracting was by the J. A. Parks Construction Co., Yakima, Wash.

The new pulp mill occupies one end of the new building in an area of 80 sq. ft. and a height of about 50 ft.

The six-tube Pandia digester utilizes horizontal feed screws. At the top of the installation are two hoppers through which the raw material enters the first tube. The stock moves continuously down through the six tubes. The cooking liquor and steam is introduced to break down the chips into pulp. A Link-Belt roller drive chain is in the main drive for the Pandia and it is equipped with Falk speed reducers for timing screw drives.

Compactness of the fibers is achieved so that pressures in the cooker do not blow them back. Yet the wood disintegrates sufficiently enough that cooking liquor reaches into all parts of the feed.

Refining and Washing

The cooked fibers go to a live bottom tank and then drop via a distributor screw conveyor into a series of refiners. At each refiner position, the required amount of stock is fed uniformly into the refiner, where the chips become pulp. An inclined screw conveyor returns excess chips to the blow tank.

From the refiners, the pulp rides a conveyor to a surge tank and then to four Sutherland pressure washers on the machine floor level which are compactly installed below the mezzanine. A Honeywell Brown panel board operates these units, all in clear view, with pushbutton controls.

This is the second Sutherland pressure washing system at Potlatch—it is also used in the No. 1 mill—and its compactness assures ease of operation, uniform press loading and increased washing efficiency. Wash-water consumption is low. Being a closed system, there are no effluent or pollution problems.

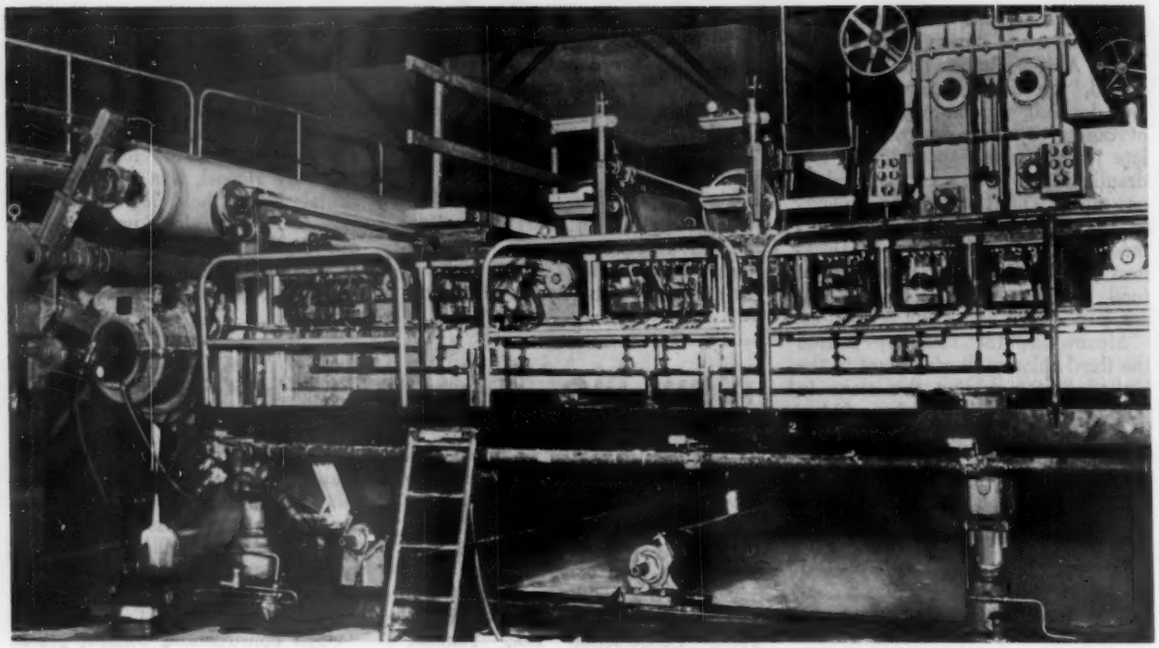
Open construction, without pillars or walls, enables a panoramic view of the pressure washers, the Sutherland refiners, the jordans and the entire length of the machine from the "pulp mill end" of the plant. And, of course, the same is true in reverse from the finishing end, 800 ft. away.

Opposite the Sutherland refiners and jordans are two Chemtile size tanks built by Chemical Linings, Inc. These are along the wall separating the No. 2 from the No. 1 mill, one for sizing bleached stock, the other unbleached. Agitators are driven by Allis-Chalmers motors with Falk reduction gears. The bleached stock comes from the bleach plant in the No. 1 mill. Another large Chemtile tank outside the building is for high-density bleached stock.

Bleach Plant is 4-Stage

The four bleach stages are chlorine, caustic, hypochlorite and the chlorine dioxide stage. One of the highly successful plants of its kind, the Potlatch mill is among the first on the continent in the use of ClO_2. The Solvay system is used to make the high brightness bleach liquor in a small plant removed some distance from the bleach plant and the number one mill. Sulfuric acid, methyl alcohol and sodium chlorate are fed in a first reactor and methyl alcohol to a second. Spent liquor goes from the first to the second, and then to a third reactor. Gas generated in the reactors passes through two absorption towers to produce bleach liquor. It is then automatically cooled with water and stored until used.

Chemical Linings, Inc., tile-lined all reactors and towers. Vitro plastic



SECONDARY INLET shown here with two dandy rolls following help PFI achieve range of 9 to 26 point paperboard.

lines tanks. Saran lines the pumps, pipes and valves. A 75-ft. high Chemtile lined tower is served by an Impco 16% consistency stock pump. Glass-lined piping carries the ClO_2 to the bleach plant. Chemical Proof Construction Co., has installed considerable additional plastic pipe of polyethyl chloride type, formerly imported from France, which has been highly successful in handling of ClO_2.

Machine Makes 9 to 26 pt.

The pair of Sutherland refiners just ahead of the jordans in the machine room are large units driven by 450 hp Allis-Chalmers synchronous motors. Next come five Shartle Miami Jordans in series, each driven by a 400 hp Allis-Chalmers motor.

These lead to a Black-Clawson Fourdrinier machine, capable of making products ranging from 9-point to 26-point board. Table rolls were covered by B. F. Goodrich.

In the press section of the machine, there is a 36-in. suction return drum press, four overhead primary presses and three main presses. Some 78 rubber-covered rolls were done by Huntington Rubber Mills, including Microrok rolls in top press positions.

The dryer section is comprised of 64 dryers in double-deck arrangement, each 60 in. in diameter. On a number of them are Lodding doctors. They are 220-in. face. There are two openside calender stacks. The paperboard is then wound on a Black-Clawson Autoflyte 42 in. reel. The plant is also equipped with a duplex cutter-slitter and a No. 35 slitter-rewinder.

Drew Engineering provided the air-conditioning and the air and exhaust systems for the machine. Clean air is a factor in the quality of paperboard made by Potlatch. Owens-Illinois fiberglass is used for insulation in the new mill.

In strapping rolls at the end of the machine for shipping, Acme Steel No. 2 tight-edge strapping is used, and rolls are braced in railroad cars with 1¼ in. Acme Steel strapping. All roll lift trucks are gas-driven tow-motors.

Two Ederer bridge cranes operate over the machine for easy, quick handling of rolls and equipment. Northwest Copper stainless steel piping and stainless steel Fabri-Valves are used throughout the machine room.

Four stock chests in the basement are tile-lined by Chemical Linings, Pumps are by Allis-Chalmers and Worthington with Falk couplings.

A General Electric turbine, equipped with two large 200 F low-speed Falk couplings, provides the drive for a line shaft which in turn drives the machine by belts. Dodge-Timken bearings are used on the line shaft. Seven General Electric motors with Falk gears are the machine backup drives.

A Lobdell 65,000 lb., No. 5 grinder, G4V type, with a 30-2 bed length keeps the rolls of the machine in proper condition.

Third Recovery Unit Is Modern

To serve the new mill, a third Babcock & Wilcox recovery boiler has been added, one of only a few recovery units in the industry to be equipped with the modern B&W Venturi Evaporator Scrubber, which combines in one piece of equipment both a concentration of black liquor and a collection of salk cake fumes. The scrubber tower washes out components in gases that cause odor.

This is one of the first such installations on the West Coast. Flexibility of the equipment permitted installation and considerable saving in available space over the conventional system of contact evaporator and electrostatic precipitator. Rated capacity is 300 tons a day with steam flow of 142,000 pph at 600 psig and 750° F. For mill No. 2, Babcock & Wilcox also provided an additional power boiler of 300,000 pph capacity. This is equipped with burners for either gas, oil or coal.

With the introduction of new natural gas lines from the New Mexico-Arizona and Canadian fields, Potlatch became one of the first of the Far West mills to use natural gas for boiler fuel.

The effluent from the mill is small because of its competent recovery process, and is carried by a 3½-mile long effluent wooden stave pipe line to a point above the confluence of the Snake and Clearwater Rivers.

Long Range Planning—a Fiasco?

PULP & PAPER interviews Ed McSweeney, who says don't blame planners for overexpansion. It isn't a science—yet.

• Has the over-expansion of industries, stimulated by glowing forecasts of many "experts," cast doubt upon the efficacy of long term planning? Is such planning to be blamed? Is it really worth the effort?

PULP & PAPER has interviewed Edward McSweeney, vice president and treasurer of Perkins-Goodwin Co., a leading management consultant, speaker and writer on management subjects since 1933, for his views on this much-discussed question. The interview follows:

QUESTION: With your long experience in long-range planning, do you see anything that is new?

MR. McSWEENEY: From necessity this industry has been familiar with long-range planning for some time. The tremendous capital investment required for any major expansion has made any planning that will cut down or minimize the risk involved of ever-increasing importance. For example, it takes a long time to grow trees, and longer yet to set up a system of managed woodlands that will guarantee an adequate raw material supply for perpetuity.

Pulp and paper companies are becoming more closely affiliated with the chemical processing industries, not only as heavy consumers of chemicals, but also as producers of chemical by-products. This integration shows signs of acceleration, often on a joint-venture basis. One year-end report of a sizable pulp and paper operation showed over $7,000,000 sales from chemical by-products. This affiliation with the chemical processing field will call for more and better long-range planning. In many instances this must carry through to the marketing of end and consumer products, so we are entering a period of integrated long-range planning.

Accepting the fact that there is some justification for the current criticism of over-reliance upon long-range planning, we must not forget that good management in our industry must continue to explore every possibility of the future. Current over-expansion should not be laid at the door of the long-range planners.

Q.: How far can we go with long-range planning?

ED McSWEENEY: "It can't chart a recession but long range planning has many values."

MR. McSWEENEY: One thing that cannot be charted by a business practicing long-range planning is the point in a projection where a plateau may be reached or a general business recession strike. That is a chance the organized business planner must take. But it is tempered by the knowledge that if the original planning was sound, any setbacks will be temporary. This is why, at least to this moment, spokesmen for our industry have no real feeling of panic and are confident that its long-range future is assured.

A man responsible for the economic health of a business has a dual problem of operating efficiently to meet today's competition, and to prepare for the uncertainties of tomorrow. The projection function is not something that can be turned on or off like a faucet, but must be continuous.

Q.: Just how does long-range planning help a company achieve success? What are its features and functions?

MR. McSWEENEY: One of the selling points for long-range planning is that it coordinates the people and facilities of a business toward the achievement of a specific goal on a scientific basis. What good management man does not coordinate his people and facilities toward a goal he recognizes as a moving target? It would be difficult to find a real business leader who didn't agree with Alice in Wonderland that the only way to stand still is to keep moving.

We might also ask how any forecast can be made on a "scientific" basis in the truest sense of the word. We have many estimates of our projected population growth, all by reliable organizations, all arrived at by 'scientific' methods, and all have different conclusions?

Q.: How long is long-range planning? You hear about the short term outlook. What is the difference?

MR. McSWEENEY: This brings us to the heart of the problem. Any long-range planning must be coordinated with equally short-term planning. One good definition of long-range planning is "that activity in a company which sets long-term goals and then proceeds to formulate specific plans for attaining these goals." Most long-range plans are projections that attempt to look at least three to five years ahead. Short-term planning is designed for flexibility, and seldom attempts to set targets more than three years ahead, always recognizing the targets are constantly moving.

Q.: What are important features of a good long-range planning program?

MR. McSWEENEY: The primary objective of long-range planning is to determine what the company's business should be in the projected future in relation to the economic health of the nation's economy and the pulp and paper industry.

The next objective is to develop a program designed to generate that business. Summed up, long-range planning should:

(a) Establish realistic objectives;

(b) Develop policies that will enable management to meet these objectives;

(c) Make it possible to execute the program in logical manner and through clearly assigned and defined responsibilities.

Q.: How would you sum this up?

MR. McSWEENEY: Over the years I have learned that one of the most difficult questions for top management to answer is, "What size do you want your business to be?"

The real value of that question is that it stimulates thinking that often leads to action, and that is the basic value of long-range planning until it becomes a more exact science.

When we go behind the words and catch-phrases, one of the best kinds of long-range planning any business can carry on is to attract and keep good men, because that is one investment you can make that will continue to grow and in the final analysis will be your future.

FORMER GOVERNOR HEINTZLEMAN: "Those of us who went to Alaska after World War I, believing it was time for widespread development, were far too early . . . but resources now appear to be moving within range of general markets."

Alaska's "Greatest Salesman

When Alaska statehood was assured, PULP & PAPER invited Former Governor Heintzleman to interpret these events for its readers.

For, more than any other single individual, Mr. Heintzleman is responsible for this new state's only major year-around industry—by far its most stable industry and very likely its greatest industry in many years to come. That industry is woodpulp manufacturing (some day it will include paper manufacturing).

Over 31 years ago, in the very first issue of PULP & PAPER magazine, he wrote a lead article expounding the opportunities in Alaska for such an industry. Since that time, he traveled far and wide in the U.S.A., "selling" Alaska to pulp and paper industry and investment leaders.

He finally won his goal, when he successfully conducted the negotiations which have brought to Alaska its first two big pulp mills, in Ketchikan and Sitka.

A forestry graduate of Penn State and Yale, he spent 40 years in the Northland. Most of these years he was Alaska's Regional U.S. Forester, in charge of 20 million acres of national forest. President Eisenhower named him governor for four years, 1953 to 1957, when Mr. Heintzleman requested that he not be considered for another term. He wanted to go back to his old job of selling Alaska to business and industry

At present he has several "hot" prospects in various business and industrial fields. He is contributing his time and travel expenses to this public service to the new state to which he has so long been devoted.

In 49th State—Pulp Leads Way

Man who helped pioneer Alaska's woodpulp industry, says statehood and population pressures will bring bigger industrial push

By B. FRANK HEINTZLEMAN

Former Governor of Alaska

(Written especially for PULP & PAPER)

● The launching of the new state of Alaska, reminiscent of the "Winning the West" days of Theodore Roosevelt, has recently given the American people a tremendous thrill.

They were led to recall that we still have a *geographical frontier*—that this type of frontier which from the beginning of our country has been a highlight of American history, has not been displaced entirely by the *technological frontier* which has moved upstage in the last 20 years.

This latter concentration on making the best and greatest possible use of what is in sight and at hand in the way of natural resources rather than opening up new sources of such material is relatively new to us. We are told that in some respects we are now a "have-not" nation; that we are running a deficit of production in relation to consumption that has reached 10% and can be expected to go higher. Any prospect for checking this increase must be welcomed.

The natural resources of Alaska, while presently little explored and less inventoried, give promise of being very helpful in this connection.

The Russians, who occupied Russian America (Alaska) from 1741 to its sale to the United States in 1867, were interested in nothing but fur. They exploited that resource, especially in highly prized sea otter—to the point of near extinction—but otherwise they left the resources largely intact. The same can be said of the thousands of Alaska Gold Stampeders at the turn of the century. They sought only gold and most of them left the country within a few years without materially altering its primitive state.

Woodpulp Helped Statehood

From that time onward to the beginning of World War II, the small population of Alaska, some 72,000 in 1940, lived principally on commercial sea fisheries, mining (principally gold and copper) and trapping. That war and the subsequent and continuing cold war which have brought enormous military defense installations to Alaska have been chiefly responsible for tripling the population, with a recent helping hand from a start in woodpulp manufacture. Even so it can be said that Alaska today corresponds to the stage of development of the eleven Western states of 75 years ago.

Development Now in Reach

Those of us who went to Alaska at the close of the first World War, believing that the time was at hand for a start of widespread development there were proved by events to be far too early. This has also been the experience of the first wave of pioneers to many other frontiers, certainly great sections of our West went through one or two generations of listless growth and, in many cases,

much privation, before things started to "open up."

Presently many of the resources of Alaska appear to be moving within economic range of the general markets; also it is reasonable to predict that population growth of the United States is reaching a point where an overflow to this new region can be expected to assume material proportions. The new state can profit from the mistakes made in resource development and management in many sections of the West. Policies and procedures that lead to "boom and bust" must be guarded against.

Supplied with the new and powerful tool of state government to use in fostering the growth of their state, Alaskans can be expected to classify, in terms of priority and value, the prospects for a healthy development of the various resources. They must act to smooth the way for the investment of capital.

Four Pulp and Paper Mills

The industrial expansion which Alaskans foresee is exemplified by the pulp and paper industry. Following a quarter of a century of inventorying forests and water supplies, studying markets, getting changes in federal and territorial laws to eliminate impediments to the huge investments required, and after a prolonged selling campaign among manufacturers, success has been attained in the last five years.

The Ketchikan Pulp Co. with an investment near $60,000,000, is operating a large mill at Ketchikan, Alaska. The Alaska Lumber & Pulp Co., an American concern backed with Japanese capital, is installing a mill at Sitka at a cost of $53,000,000 to manufacture dissolving pulp, primarily for sale to the rayon industry of Japan. The Japanese, one of the world's leaders in rayon production before World War II, lost their sources of pulp with the loss of Manchuria and Saghalin Island in that war and have now arranged for new sources, including the Alaska operation.

The third pulp mill for which a long term timber supply has been arranged is to be built in Juneau, the capitol of Alaska, by Georgia-Pacific Co., and in the future, this also probably will include a large plant for newsprint manufacture.

Another prospective operation is a relatively small pulp mill to be established at Wrangell within a few years, as a supplement to a sawmill on which construction is to start in 1959. This combination enterprise is to be installed by Pacific Northern Timber Co. Portland, Ore.

Effect of Growing Populations

Western hemlock comprises 70% or more of the forests from which these mills draw, or will draw, timber supplies. Existing and additional sawmills, plywood plants and shingle mills will largely utilize the Sitka spruce, Western red cedar and Alaska yellow cedar which comprise the remainder of the forest growth.

The growing population of the world and the increasing use of pulp and other timber products have finally made possible a beginning on the extensive use of this Alaska forest resource.

The commercial timber of southeastern Alaska is largely in the Tongass National Forest, under administration of the U.S. Forest Service. The timber resource is managed under the proper silvicultural practices and on the sustained yield principle. A perpetual timber supply for the established industries can thus be counted on and timber is made available for use under long term cutting contracts, in cases where heavy mill investments are required.

Interior Alaska, that is, the great river drainage areas lying north of Anchorage and Valdez, contains large areas of white spruce and white birch, the same forest type that extends across Canada and supports a large pulp manufacturing industry in Ontario and other eastern provinces. After the more accessible forests of southeastern Alaska are fully developed, it is reasonable to predict that a start will be made on these interior forests. Virgin timber in this area is estimated to cover as much as 25 million acres (10 to 20 cords per acre).

Status of Other Industries

One renewable resource that has been faltering in recent years is the commercial salmon industry, though it still provides a tax source. For reasons not yet fully established the number of migrating fish has distressingly diminished over the past ten years.

Another resource of great potential value, consists of recreational features. Moose, giant brown bear, mountain sheep, goats, caribou and deer and a variety of game fish are attractions for sportsmen. Coupled with outstanding scenery, these are the ingredients for a great tourist and recreation industry.

Late geologists' reports show 90-,000,000 acres of geological structures favorable for the presence of oil. A total of 32,000,000 acres is under lease or has been applied for and 17 companies are conducting explorations.

Gold production is lagging due to the low price of gold. Platinum is being profitably mined. Other minerals being studied, which hold the best promise for early development, include iron ore and nickel, with copper, chrome and tin next in line.

The Yukon, Copper, Susitna and other Alaska rivers offer an opportunity for installing a series of large low-cost water power plants which can be connected by transmission into a great system.

An Eastern coal producer is studying coking coal sources of this material to supply markets in Japan and other countries on both sides of the Pacific.

Agriculture, contrary to the general impression, can be an important contributor to Alaskan development.

Much Property is Federal

The federal government owns 99% of Alaska's land and water area and while its efforts to make the resources of land and water available for use by individuals and corporations have improved in the past few years, Alaskans are confident that the state can do better.

The latter has a greater interest in getting results and more close-hand knowledge of what is required to stimulate development. Consequently, there is general satisfaction in the fact a large federal land grant (over 103,000,000 acres), an area as large as California, will come to the new state, also that the state will henceforth own and control the tideflats and submerged lands out to the 3-mile limit, along the thousands of miles of shoreline of mainland and islands.

If even reasonable judgment is exercised in making this vast treasure of land and water resources available for use under equitable terms, Alaska should be able to make the transformation from territory to state status without incurring any great financial difficulties.

An overriding favorable feature for satisfactory Alaskan development lies in the fact that development programs for its resources can start practically from "scratch" and with the successes and mistakes of the earlier Western developments to serve as guidelines. In only a few instances in Alaska must mistakes be rectified before constructive programs can be started.

Alaska has an outstanding opportunity at this time to lay down a foundation for a brilliant state future and in a region of fascinating natural beauty, that serves as an additional incentive for settlement.

Bolton Award Winner Sets 4-Point Program

"How I Can Help Relations Between My Company and My Community" was the subject of the 1958 Bolton essay contest open to all workers in this industry. Here are excerpts from the prize-winning entry by John R. Bentley, Western Kraft Corp., Albany, Ore.:

"The responsibility for the bettering of this relationship between my company and my community rests with individuals like myself rather than with those who may make up company policy. It is always company policy to have better community relationships, but without individual support such policy is useless. . . .

"There are several basic parts to a program I believe I can and should partake in to promote better company-community relationships.

"1. Gaining knowledge about both my company and community. Following this naturally is the spreading of this knowledge to both my fellow workers and my neighbors in the community.

"2. Acquainting myself with the other businesses and industries in the community. Here, I would learn how the business group as a whole might strengthen the community.

"3. Taking part in community projects that will help make the community a better place to live.

"4. (most important) Setting an example as a representative of both my company and my community so that people might see the pride I have in being part of both."

Bolton ..... Bentley

TOP $1,000 PRIZE goes to John R. Bentley, asst. in traffic, production, planning & purchasing, Western Kraft Corp., Albany, Ore., as winner of national Bolton essay contest. A. L. Bolton, Jr. treas. of John W. Bolton & Sons, made the award.

CEILING-HIGH STACKING IS ANSWER . . . Panorama view of the Times-Mirror main warehouse indicates the huge volume of paper handled. Vertical stacking of rolls, without the use of space-consuming dunnage, permits maximum usage of the cubic content of the warehouse.

Clamp Trucks Increase Roll Storage 250%

The Times-Mirror Co., Los Angeles, is an enthusiastic supporter of electric powered clamp trucks for newsprint handling. It uses more than 180,000 tons per year.

Great strides have been made in increasing handling and storage efficiency, while reducing roll damage. Much credit is attributed to a 13-truck fleet of electric powered trucks, all with hydraulic operated, rotary roll paper clamps.

Back in 1947, the Times-Mirror used 39,000 tons of newsprint per year. Rolls were stored in 41,000 sq. ft. warehouse. Rolls were manually stored in the horizontal position using dunnage. This required six men and paper damaged was estimated at 1%.

In 1950, paper consumption was increasing and 85,000 sq. ft. more storage space was acquired. Times-Mirror bought its first Elwell-Parker electric powered roll clamp truck, used to stack rolls in a vertical position. In an area which would accommodate only 8,855 rolls in a horizontal position, 17,700 rolls were tiered vertically four high.

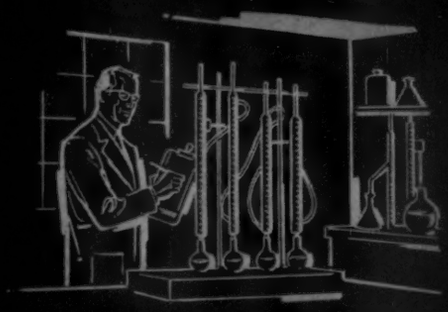
The next year, the Times-Mirror purchased two 2,000-lb. capacity Elpar roll clamp trucks. These replaced two gasoline powered trucks used in a confined basement area where fume-free operation proved an advantage. The clamp trucks stacked rolls vertically instead of horizontally, increasing storage capacity by 50%.

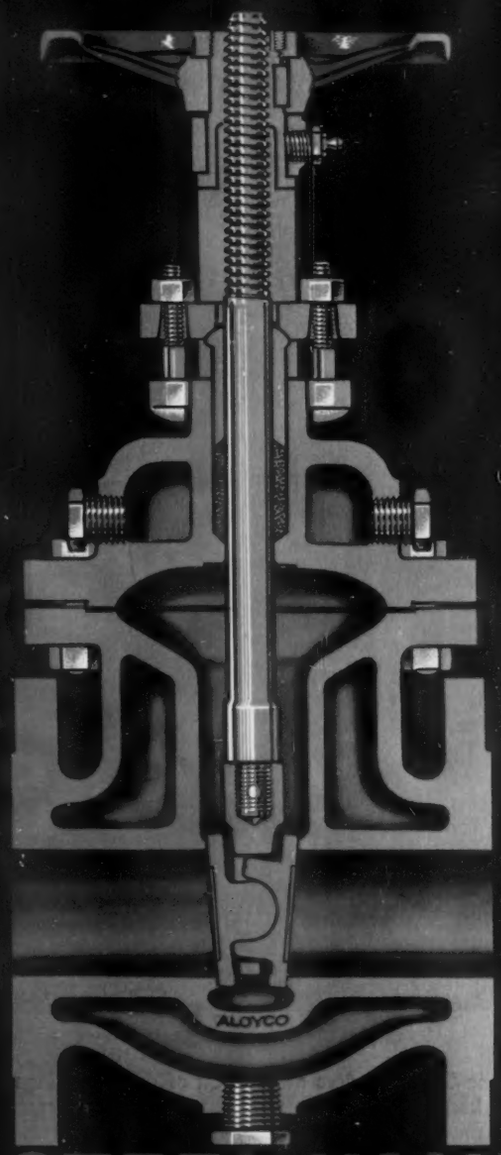
Next step in converting to a roll clamp fleet was the purchase of additional 2,000-lb. clamp trucks to unload street trucks and place rolls on an elevator for delivery to basement storage. Formerly two men using hand trucks could unload 18 rolls in about 25 minutes. With the Elpar clamp trucks, one man unloads 20 rolls in an average of only ten minutes.

Next improvement came in 1956 when, working with the Publishers' Paper Co., suppliers of newsprint to the Times-Mirror, a method of handling newsprint on skids was developed (previously reported in PULP & PAPER). Primary objective of this skid handling technique was to reduce paper damage which occurred between the mill and the user's warehouse. The skid system necessitated use of a clamp truck capable of reaching across the bed of a street truck to pick up rolls. To meet this need, Elwell-Parker developed a special clamp truck with added outreach. Use of this overall handling system reduced roll damage to an all-time low of .005%.

As requirements increased, Times-Mirror endeavored to make even better use of available space. It purchased a special Elpar stacking clamp truck which permits stacking rolls five high. Two of these increased available space by 15% to 25%.

Looking at the overall results of the truck storage system, company officials estimate that the clamp trucks have increased by 250% the total available storage space within existing facilities.





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STAINLESS STEEL VALVES

Aloyco's specialized research . . . in the field and in the lab . . . brings you a wealth of metallurgical information for successfully solving your corrosives-handling problems.

Coupled with continuing research in design, foundry and machining techniques, this Aloyco specialization results in new and better corrosion resistant valves for many specific applications. One example above: Aloyco completely jacketed valves (the first ever to be integrally cast in high alloys) are designed for viscous liquids and other fluids difficult to move at room temperatures.

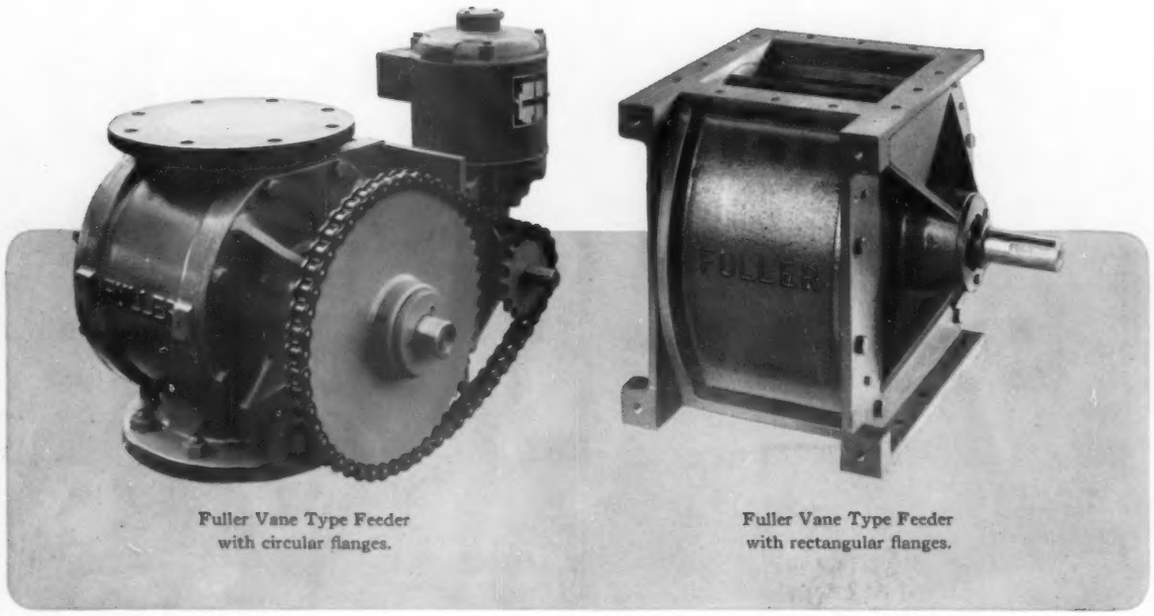
Isn't your surest source of supply the one company with research, manufacturing and sales all devoted to Stainless Steel Valves exclusively?

Longer Lasting
ALOYCO
VALVES
1ST IN CORROSIVE SERVICE

ALLOY STEEL PRODUCTS COMPANY
Linden, New Jersey

Fuller Feeders
Keep Conveyors Flowing Freely

. . . whether the load is a few pounds a minute or many tons an hour



Fuller Vane Type Feeder with circular flanges.

Fuller Vane Type Feeder with rectangular flanges.

Fuller Vane Type Feeders assure you of dependable handling of dry, pulverized and granular materials. They're available in capacity ranges to meet all normal plant requirements, and are built with circular or rectangular outlets. Check these Fuller cost-saving features . . .

Extra-rugged construction. Heavy, cast iron body walls and headplates add rigidity, longer life. Stainless or other metals can be used where sanitary or corrosion requirements demand their use.

Sealed bearings are equipped with Alemite fittings for ease of lubrication and long life. Abrasive particles can't enter, maintenance is cut.

Make effective air locks. Fuller Vane Type Feeders can be used as air locks for pressure differentials up to 3½ lbs.

Stuffing boxes and ball bearings for vacuum, low-pressure and general applications.

And, where extreme volumetric accuracy without pulsation is needed, there's a line of Fuller Roll Type Feeders. For full details on Fuller Feeders write for Bulletin.

See Chemical Engineering Catalog for details and specifications . 1306 F-20

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. . . . pioneers in harnessing AIR

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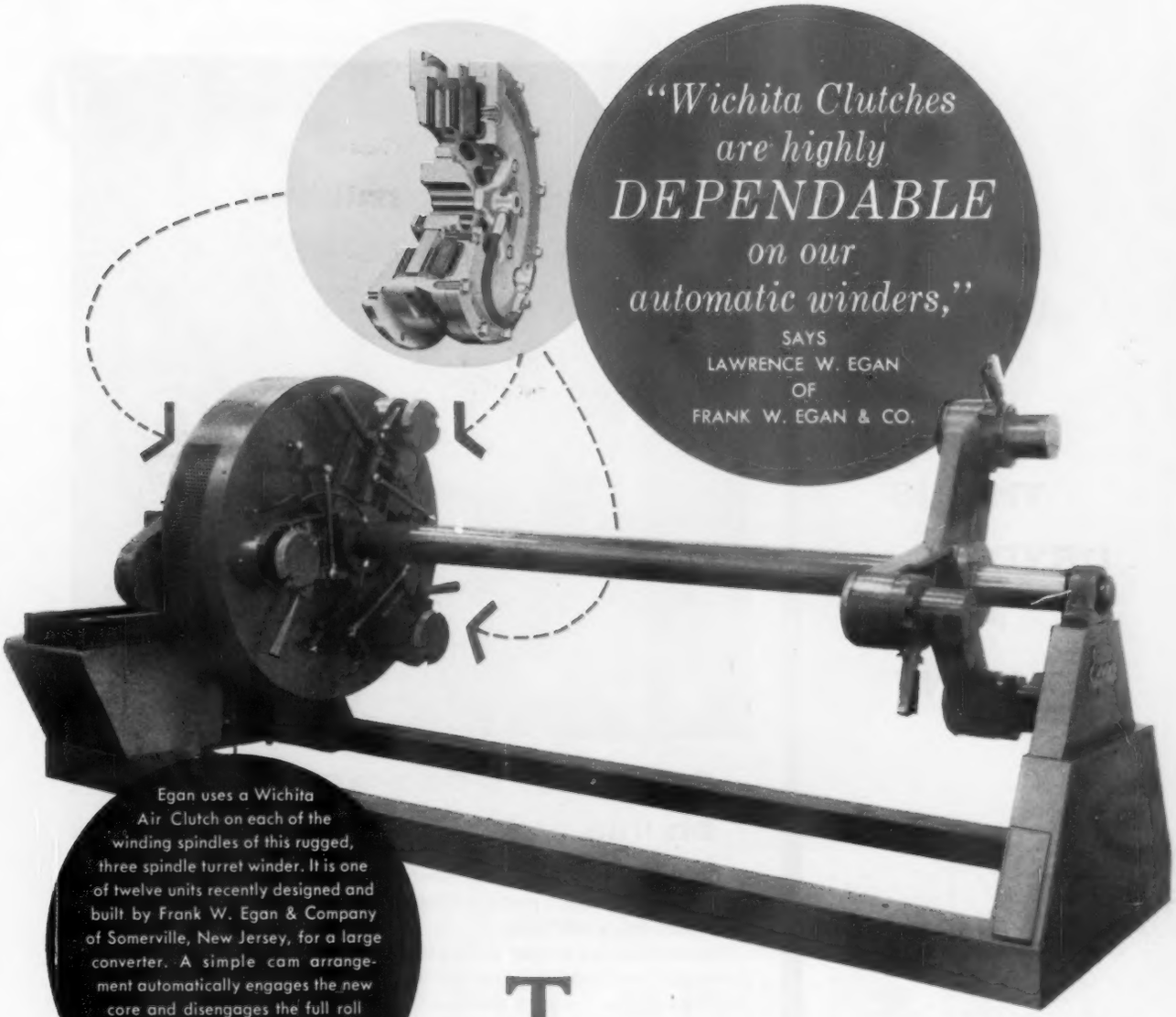
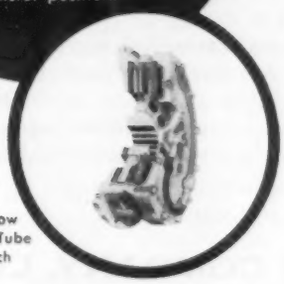


"Wichita Clutches are highly DEPENDABLE *on our automatic winders,"*

SAYS
LAWRENCE W. EGAN
OF
FRANK W. EGAN & CO.

Egan uses a Wichita Air Clutch on each of the winding spindles of this rugged, three spindle turret winder. It is one of twelve units recently designed and built by Frank W. Egan & Company of Somerville, New Jersey, for a large converter. A simple cam arrangement automatically engages the new core and disengages the full roll as the turret is rotated into transfer position.



Wichita Low Inertia Air-Tube Disc Clutch

These Wichita-equipped winders are designed to handle a wide range of webs.

"Since our winders are designed to accommodate various webs," says Mr. Egan, "we require a highly dependable clutch which can be maintained easily and does not involve complex linkages to obtain necessary automatic features. The design of the Wichita Clutch also lends itself to a more compact assembly."

If you want the best service from your equipment, be sure it is equipped with Wichita Air Clutches and Brakes.

Contact your nearest Wichita Engineer!

Brehm-Lahner, Inc., Detroit, Michigan
L. H. Fremont, Cincinnati, Ohio
W. G. Kerr Company, Pittsburgh, Pa.
Smith-Keser & Co., Avon, Conn., Philadelphia 44, Pa., and New York, N. Y.
Frank W. Yarline Co., Chicago, Illinois
Larry W. McDowell, Long Beach, California
Andrew T. Lobel, Denver, Colorado
Robert R. King Co., Cleveland, Ohio
Norman Williams, Houston, Texas
Allied Transmission Equipment Co., Kansas City 8, Missouri
Donald E. Harman, Dallas, Texas
C. Arthur Weaver, Richmond, Virginia
Malcolm S. Cone, Memphis, Tennessee
Dominion Power Press Equipment, Ltd., Burlington, Ontario, Canada
R. E. Kunz, Seattle 4, Wash.
W. G. Ballantyne Co., Portland 4, Ore.
Bates Sales Co., St. Louis 1, Mo.

WICHITA Clutch COMPANY, INC.
WICHITA FALLS, TEXAS, U.S.A.

THIS IS
DRYDEN
PAPER
COMPANY

Customer's one-word report on this pulp: "WONDERFUL!"

Back in the Spring of 1956, one of America's leading paper makers began to look for ways to improve their products. They realized that, to get a better product, they had to start with a better pulp.

The engineers and lab men at this plant heard reports about a new pulp coming down from Canada—the two-stage chlorine dioxide Northern bleached sulphate pulp that Dryden Paper Company would soon be producing at its new Dryden, Ontario, plant. So these paper men ordered a fifty-pound sample of Dryden, unbleached, so that they could bleach it and follow it through into paper in their own labs.

Their one-word report: "Wonderful!"

Soon after the opening of the Dryden plant in 1957, they contracted for several thousand tons of Dryden pulp for each of the next five years...but they soon came to rely on Dryden as their *only* source for quality pulp, continually upping their shipping orders. 1958 shipments are nearly three times the original tonnage.

Compare Dryden Bleached Sulphate with the best quality pulp you know. You, too, will say it deserves all the laboratory endorsements—*and all the production testimonials*—it now enjoys. Order a trial shipment today.

DRYDEN PAPER COMPANY, LIMITED
DRYDEN, ONTARIO, CANADA

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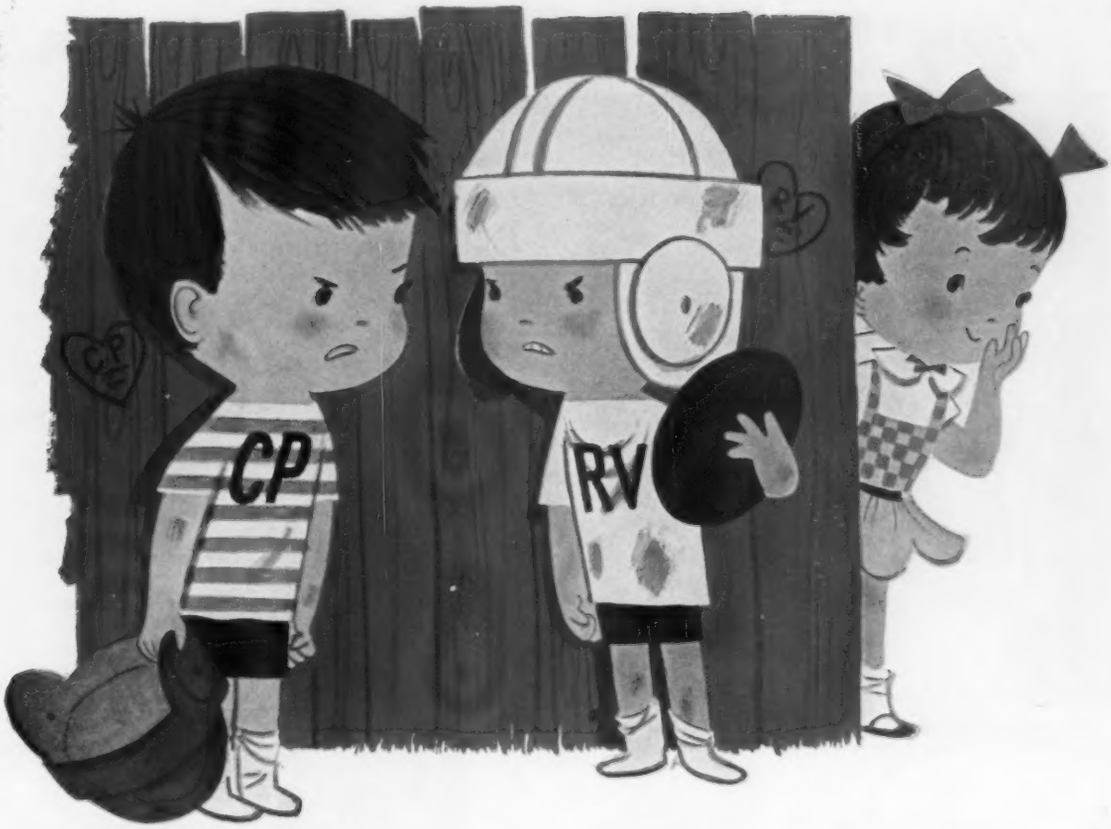
USCOLITE PLASTIC PIPE



INITIALS MEAN A LOT...in Plastic Pipe, too

That's why Uscolite® plastic pipe and fittings come in two specific types, each equally good for its particular purpose. Just pick the right initials:

Uscolite CP: a styrene-acrylonitrile-butadiene copolymer is the ideal selection where maximum resistance to impact is demanded; will handle safely most chemicals of industrial importance at working temperatures elevated to 170°F.

Uscolite RV: an unplasticized, unmodified polyvinyl chloride (PVC) is the best choice for extremely active oxidizing agents such as strong sulphuric, nitric and chromic acids. Impact strength and temperature limits are more than adequate for normal service.

Both Uscolite RV and Uscolite CP have been carefully engineered to solve particular corrosion problems. Our technical men will help you select which is better for the service conditions involved.

Both types of Uscolite are extraordinarily resistant to corrosion. They are non-contaminating, odorless, impart neither taste nor discoloration. Uscolite's numerous applications throughout industry continue to multiply.

• • •

When you think of plastic, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality plastic pipe and fittings.

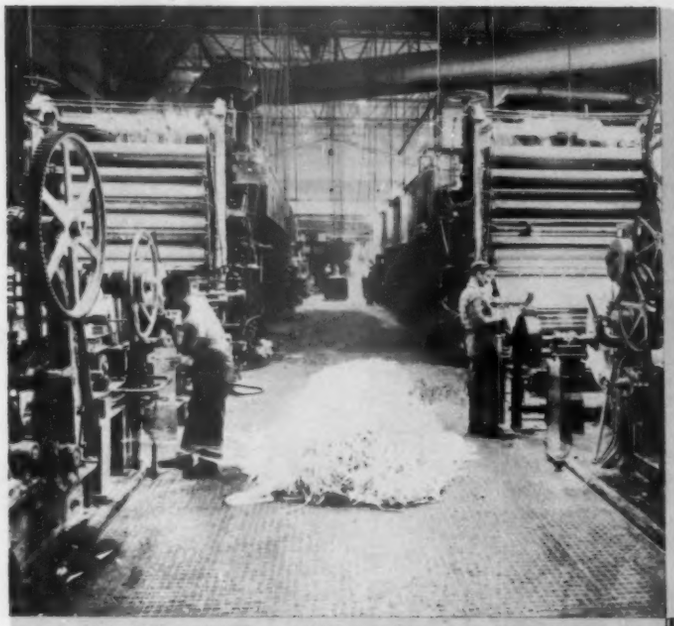
Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

Gould Paper Company converts 3 Paper Machines to Norgren MICRO-FOG® Lubrication



MICRO-FOG Lubrication for No. 1 and No. 2 machines at Gould Paper Co. has reduced bearing temperatures 10°F. to 20°F.

Norgren MICRO-FOG® Gives Gould These Benefits:

- Bearing temperatures reduced as much as 50°F
- Frequent bearing failures ended
- Hand oiling eliminated
- Excessive lubrication maintenance ended
- Lubricant consumption greatly reduced
- Fire hazard removed
- Perfect lubrication for all bearings
- Lubrication continuous and automatic
- Product contamination eliminated

Gould Paper, plagued with excessive down-time due to unsatisfactory lubricating methods, investigated all available centralized lubrication systems. As a result, early in 1957, they converted 368 bearings on three paper machines to Norgren Micro-Fog lubrication.

Micro-Fog has reduced bearing temperatures as much as 50° F. Average operating temperature of 85 half-plain bearings has dropped from 189° F to 139°F.

Micro-Fog has cut oil consumption more than 66%. In addition, the cost of hand oiling and block grease replacement has been eliminated. Also eliminated are the extra maintenance, lost production and fire hazard caused by the dripping of lubricant.

For all the details –

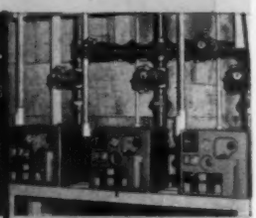
WRITE FOR FREE BULLETIN: MF-26

If it's Norgren... It's Dependable.

C. A. NORGREN CO.

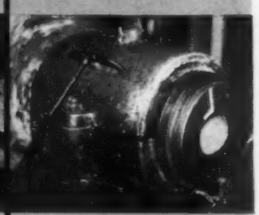
3458 SO. ELATI STREET • ENGLEWOOD, COLORADO

MICRO-FOG Units for machines No. 1 and No. 2.

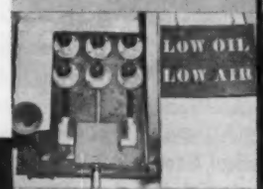


Three MICRO-FOG Units serving the No. 3 machine.

MICRO-FOG lubricated Timken bearing on dryer rolls.



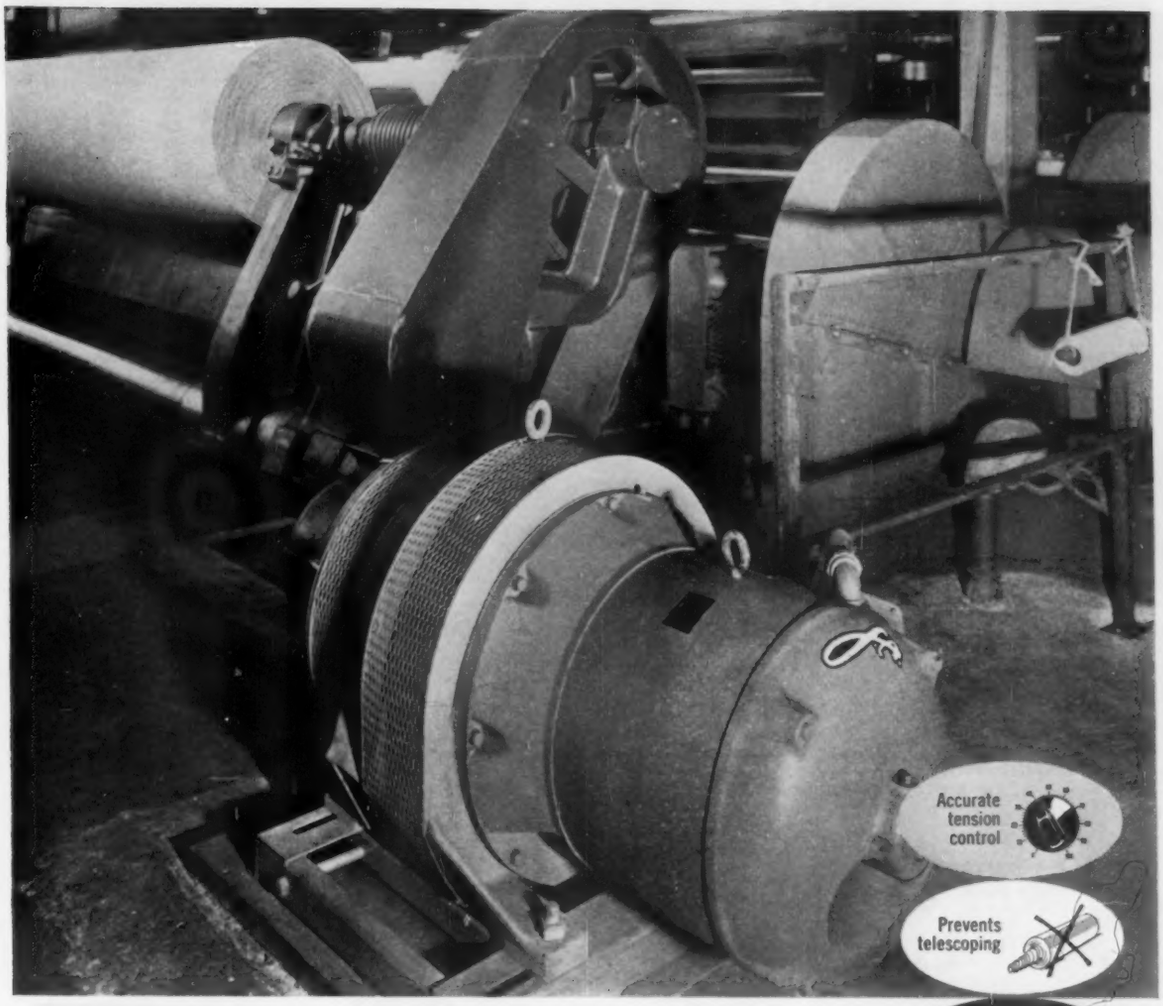
MICRO-FOG reduced temperature on dryer roll bearings of No. 3 machine 50°F.



Alarm Panel— MICRO-FOG Units warn of conditions affecting proper lubrication.

MICRO-FOG lubricated bearings.

ICM



Where tension pays off

Louis Allis adjustable speed drives provide soft start . . . controlled acceleration . . . smooth pick-up after roll changes

Paper-winding operations (above) rely on tension . . . accurately applied. That's why you'll find Louis Allis Ajusto-Spede® drives on those center-winding operations where precise speed control saves time, paper, and handling . . . eliminates operator fatigue and its resulting inefficiencies and costly waste.

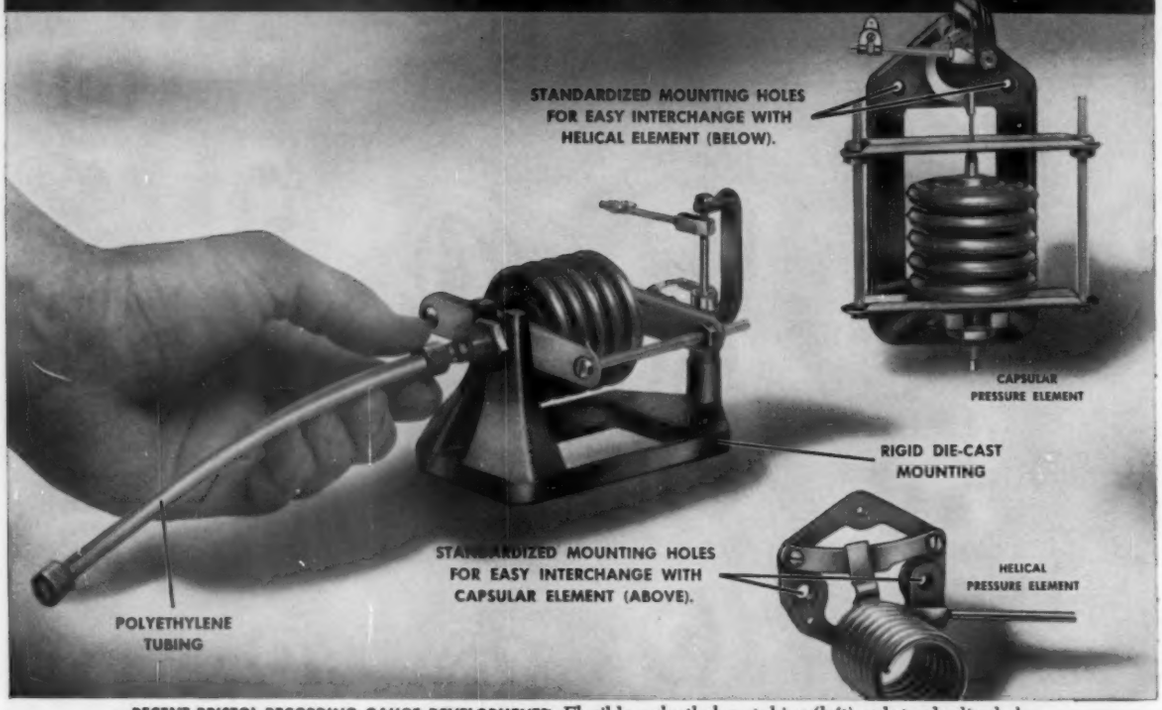
For operations requiring up to 75 hp, Ajusto-Spede® delivers the exact speed you want, when you want it. This accurate Louis Allis adjustable-speed control permits smooth speed reduction for easy "on-the-fly" roll changes . . . glides into proper tension quickly and safely. And you get the same soft-start, superior performance whether you're handling delicate tissue or heavy board stock, parchment or paper.

Here are just a few of the features of this versatile adjustable-speed drive: linear speeds from 100 to 2,000 fpm — roll build-up ratios up to 15:1 — controlled tension from ½ to 10 lbs. per inch of width — inertia compensation for maximum acceleration rates — adjustable stalled tension for smooth starts. This precise tension control means greater high-speed production . . . less downtime on windup drives in all phases of paper manufacture. Contact your nearby Louis Allis District Office or write The Louis Allis Co., 444 East Stewart Street, Milwaukee 1, Wisconsin. Ask for Bulletin No. 611E.

LOUIS ALLIS

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES

WHAT'S NEW IN RECORDING GAUGES AT BRISTOL...



RECENT BRISTOL RECORDING GAUGE DEVELOPMENTS. Flexible polyethylene tubing *(left)* and standardized element mountings simplify element interchange, provide increased mounting rigidity and vibration isolation.

Why are more Bristol Recording Gauges used than all others combined?

A key reason for this preference: *Bristol Pressure Measuring Elements.* They're the result of more than 69 years of practical experience. *And field reports show that our recording gauges, equipped with these famed measuring elements have been in constant service for up to 40 years! An outstanding record for long life and stability!*

Another reason: Our continuous development program, aimed at keeping Bristol Recording Gauges far in advance of today's needs. The latest results of this program are now available in Bristol Recording Gauges:

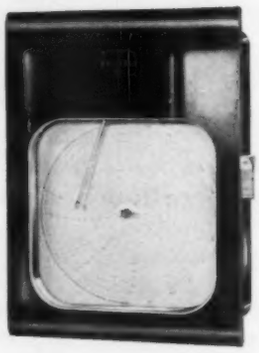
Easy-change elements. Element mountings have been redesigned to insure interchangeability of elements. You can buy a pressure gauge with any standard helical element and change later to any standard capsular type element, or *vice versa.*

Extra mounting rigidity. Rigid cast-aluminum element mounting gives you greater accuracy, stability and reliability.

Flexible polyethylene tubing used to connect measuring elements. Simplifies interchange of elements, simplifies maintenance. Isolates element from shock and vibration.

Improved element materials. Capsular measuring elements are now available in **316 stainless steel and Ni-Span C,** as well as phosphor bronze. As a result, this type of measuring element, ideal for low pressures, can now be used for a large number of corrosive fluids. Helical elements are now available in **316 stainless steel and Ni-Span C, too,** as well as trumpet metal and beryllium copper.

Find out more about these latest Bristol gauges for recording, automatic control, pneumatic transmission and telemetering. Send for our 32-page catalog G621, today. The Bristol Company, 142 Bristol Road, Waterbury 20, Conn. 8.24



BIG REASON FOR USER PREFERENCE is Bristol measuring elements, unexcelled for accuracy, precision, long-term stability. **They're made in ranges from 0-6mm mercury absolute to 0-10,000 psi.**

BRISTOL *TRAIL-BLAZERS IN PROCESS AUTOMATION*

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

At Rhoads, the Job Selects the Belt

In the Rhoads' family of beltings, there is a flat belt that is exactly right for your operating conditions.

It mav be Tanastic, new leather/plastic belting with a stretch-free nylon core.

It may be Texalon, new all-synthetic belting of fabric and nylon . . . elastic and almost 100% stretch-free.

It may be Tannate leather belting, the product of more than 250 years of tanning experience.

Rhoads' Engineers Consider All of the Factors Involved

The advantages of the flat belt drive — economy in original cost and in operation; highly efficient speed reduction; shock absorption; high degree of safety; flexibility in placement of motor — all these advantages and many others are used by Rhoads' engineers.

Based on the job the belting is to do, and the operating conditions involved, Rhoads recommends the belting that is engineered to your needs.

No-Stretch Tanastic

Makes Power Transmission News

In every industry, where unscheduled shutdowns for belt adjustment increase production costs and "eat up" profits, the new Rhoads Tanastic, leather/plastic flat belt, is the choice of belting engineers.

Shown is a lineshaft-driven papermaking machine, where power must be transmitted smoothly and uniformly regardless of shock loads. On cone drives, Tanastic belts down to one-third the width of previous belts can frequently be used. Permits faster driven speeds and a wide variety of speed changes.

Tanastic has a stretch-free nylon core that gives the belting the ideal combination of strength and elasticity. Economical replacement for other flat or V-belts. Easily designed for new installations.

Let us quote Tanastic for a specific drive or write for new bulletin. Address Engineering Department, J. E. Rhoads & Sons, Wilmington, Delaware.

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Since 1702 . . . Pioneers in Mechanical Power Transmission

Try a New

Dura-Loft Felt!

The Dura-Loft Felt provides desired bulk and surface characteristics *without heavy napping* and the consequent presence of loose fibers.

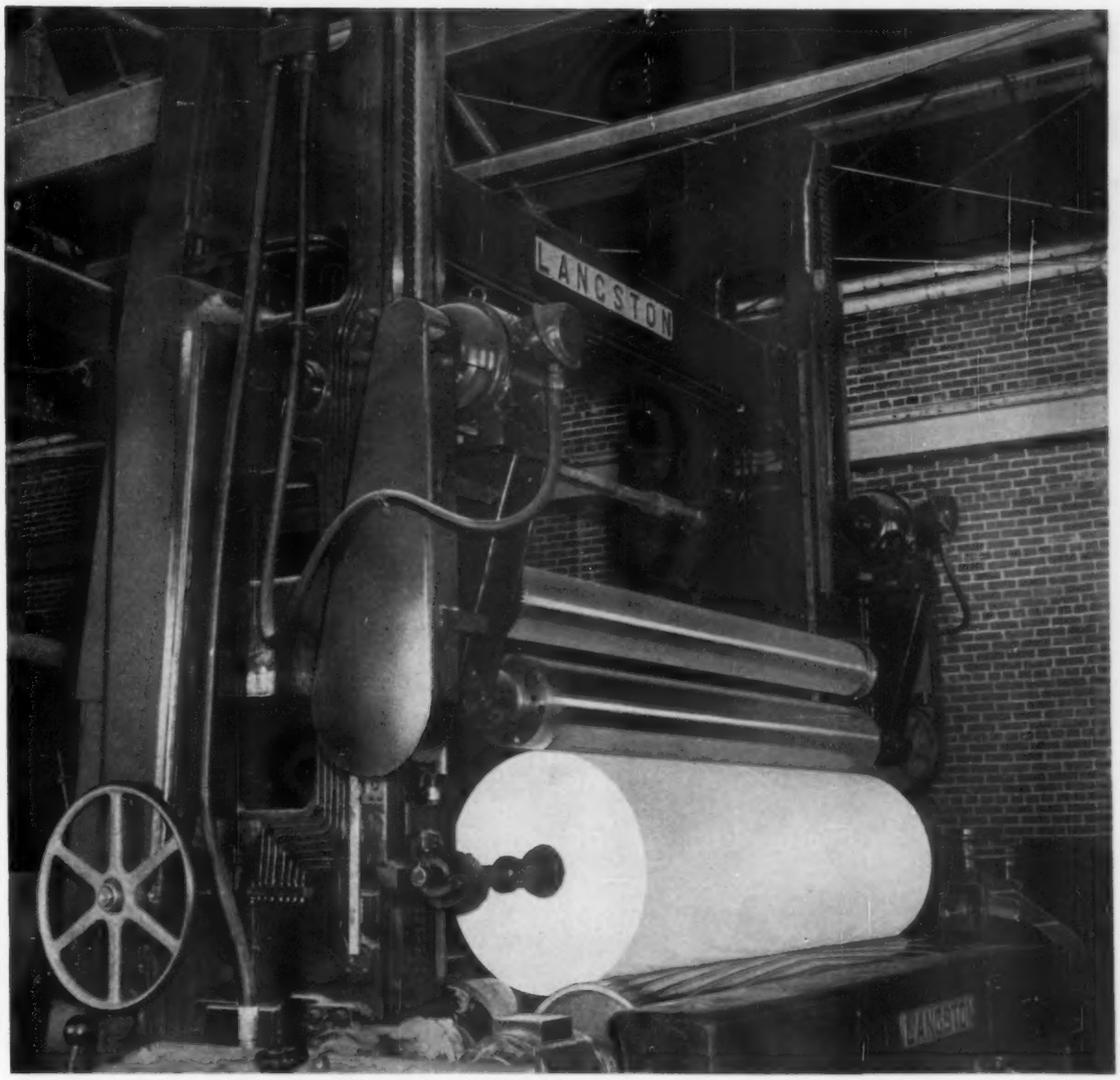
TENAX Dura-Loft Felt

Serving the Papermakers
Since 1891

TENAX FELTS

LOCKPORT FELT COMPANY, Inc.

NEWFANE, N. Y. **STARKVILLE, MISS.**



Langston Slitter and Winder features precision roll density control

Here's a way for you to get uniform roll density from the core to the outside. This type "DH" Slitter and Winder features hydraulic rider roll control that automatically adds or subtracts rider roll weight.

This arrangement makes it possible to constantly maintain correct nip pressure to compensate for the changing diameter and weight of the rewound roll. A simple valve permits setting the correct rider roll weight for various grades and basis weights of both paper and board.

Pushbuttons for raising and lowering the rider roll during threadup replace complicated chains, sprockets, and bulky counterweights, thus speeding up production by reducing setup time.

Learn more. Write SAMUEL M. LANGSTON Co., 6th & Jefferson Sts., Camden 4, N.J.

SHEAR CUT CLEAN CUT

LANGSTON *Leadership...by design*

Here's why WEST END can answer an inquiry on your particular specifications immediately!

When you require special data on a WEST END product and phone for information, the Sales Office Manager in Oakland with whom you speak can contact the plant at WEST END immediately. He talks by private wire teletype with the Technical Director and receives an authoritative answer immediately. It is relayed to you often while you are still on the phone.

WEST END's Sales Office Manager sales representatives and plant executives work together as a team manning a system that is, in our opinion, uniquely outstanding in the chemical industry. Their confidence in the efficiency of this system is reflected in the enthusiastic, helpful and friendly manner in which they promptly serve you . . . our customers.

WEST END CHEMICAL COMPANY
DIVISION OF STAUFFER CHEMICAL COMPANY
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SODA ASH
SALT CAKE
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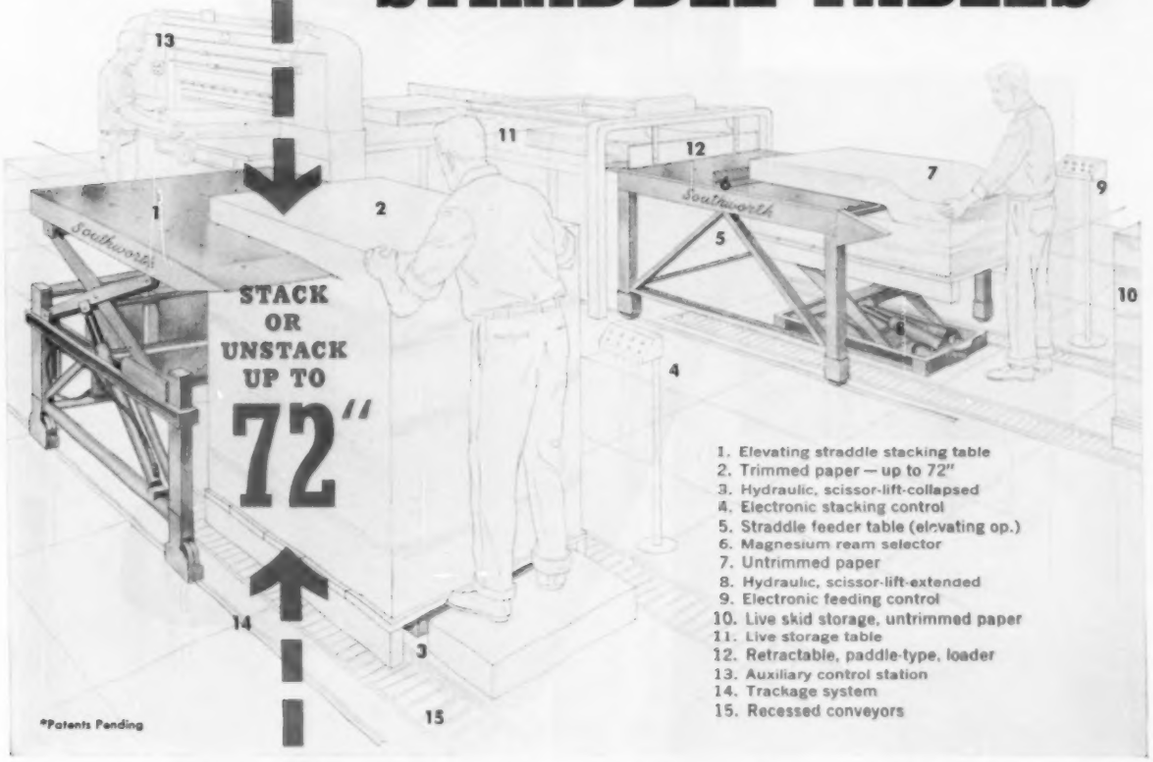
SOUTHWORTH'S NEW
self-elevating
STRADDLE TABLES*



minimum capital investment, per pair, pays off in maximum trimmer production engineered to prevent idle time, eliminate manual lifting, conserve floor space 1000 lb. capacity, sheet size 52 x 76 — air film buoyance protects sensitive stock.

What is the present speed at which you can de-skid, feed your mill trimmer, trim, unload and stack as high as 72 inches? For it is that speed which determines to a great extent the efficiency, and in turn the cost, of your finishing room operations.

Would you like to double that speed? Southworth Straddle Tables have done even better in other mills . . . primarily by reducing manual handling to a minimum and by permitting *full time operation of the trimmer, itself.*

Could the typical three-man layout, illustrated above, be adapted to your mill on a self-liquidating basis? We believe it can. The equipment cost is surprisingly reasonable . . . the installation cost equally low, as no excavating is necessary.

For Details Write or Call Collect:

SOUTHWORTH MACHINE CO. since 1890

SOUTHWORTH MACHINE CO.

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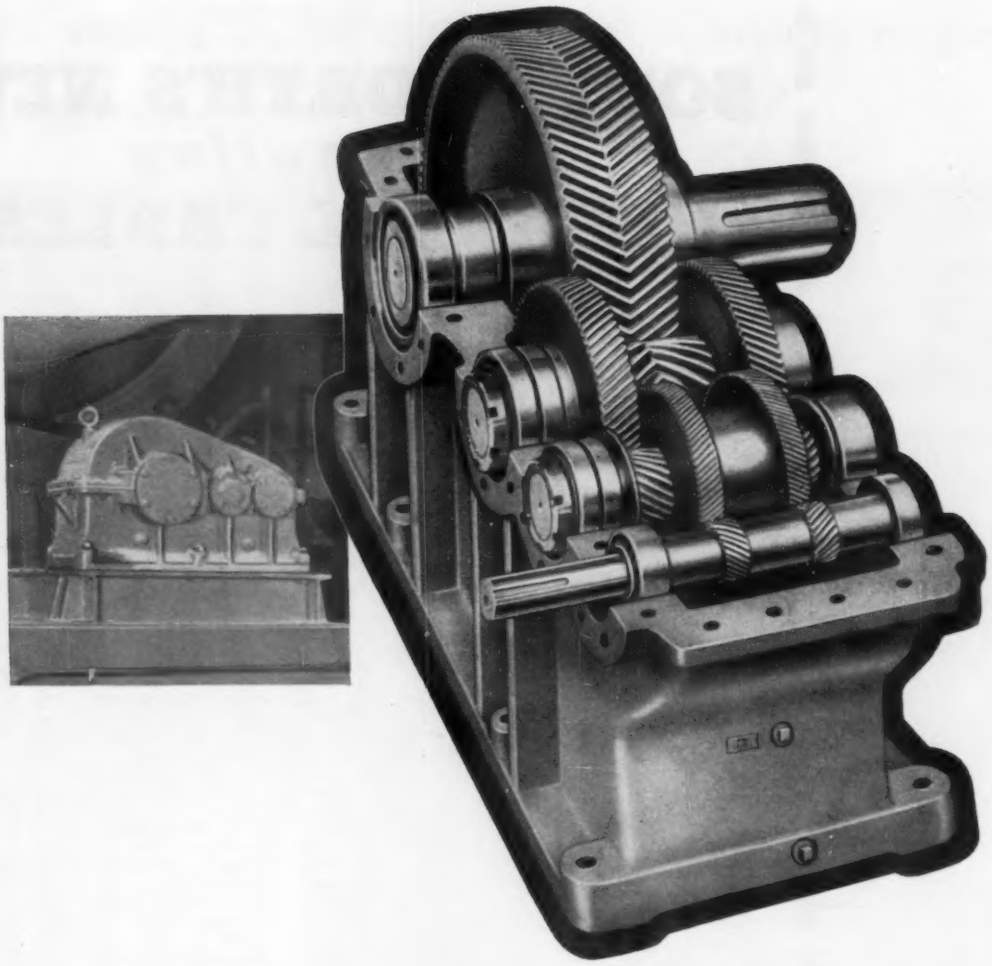
Mfrs. of Paper Conditioners; Automatic Skid Lifts; Lift Tables; Skid Turners; Hand, Foot, Motor Driven Punching Machines; Humidifiers; Envelope Presses; Punch Heads; Tabbing Knives and Corner Cutters plus Custom Built Equipment.



THE HEAVIER THE LOAD . . . THE MORE YOU NEED

PHILADELPHIA HERRINGBONE REDUCERS

Heavy repeated shock loads . . . high horsepower . . . round-the-clock operation . . . put them together and you have the kind of a job where Philadelphia Herringbone Reducers perform best. They will last longer and save your maintenance dollars because extra strength is built into every part . . . housings, shafting, bearings and gearing.

To be specific:

Housings are specially reinforced at points of greatest stress. Extra heavy bearings take shocks and heavy overhung loads in stride. Result: shaft alignment is accurate . . . and it stays accurate. Gears, pinions and bearings last longer.

To meet the specific needs of each application, gearing is specially designed and symmetrically arranged in the housing. Result: the bearings on each shaft carry equal loads, shaft deflections are minimized, bearings and gearing have higher shock load capacity.

Pound for pound, horsepower for horsepower and dollar for dollar, you can't buy a herringbone reducer that will outlast a Philadelphia. They are designed with *your* heavy duty drive problems in mind . . . so that you will never have a drive problem.

Philadelphia Herringbone Reducers are available in single, double and triple reduction for ratios of 1.75:1 to 292:1. Write today for your copy of Catalog H-55.

PHILADELPHIA GEAR CORPORATION

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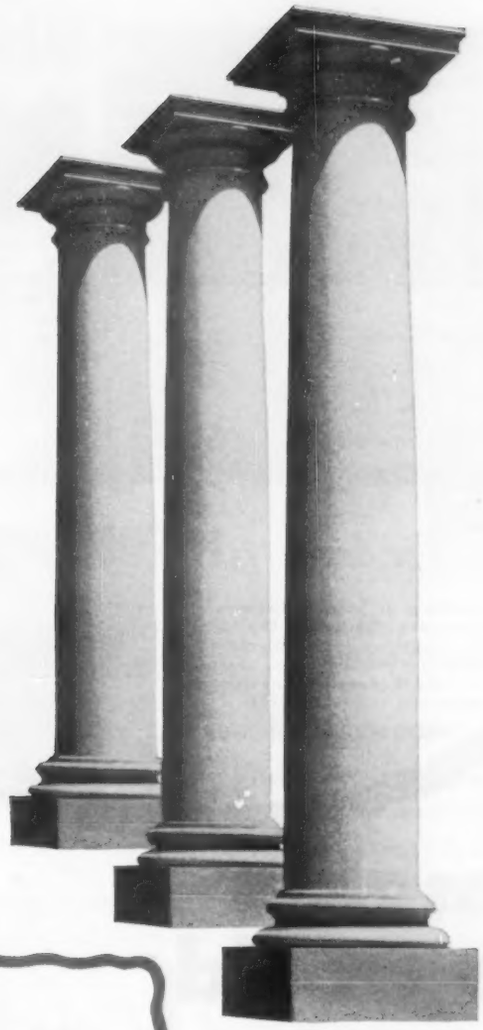
philadelphia gear drives

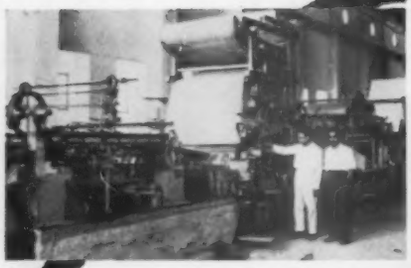
Offices in all Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.

INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS



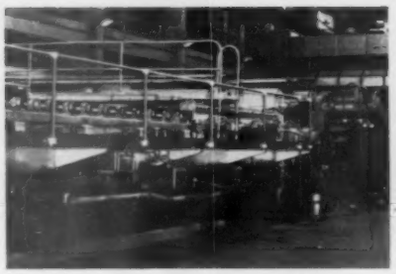
PUGET PULP IS STRONG

PUGET SOUND PULP and TIMBER CO.
BELLINGHAM • WASHINGTON



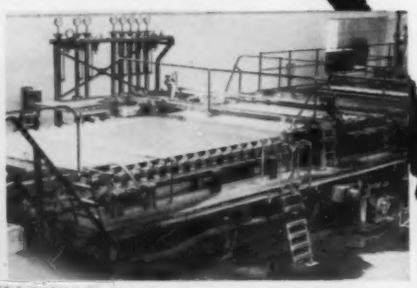
"मैसर्स हिल पेपर मेकर" बनाए से अच्छा है कि वह कागज बनाने के काम में अपना प्रयोग किया जा सकता है। यह और किसी मकसद के काम करता है और साथ ही भी अच्छा काम करता है।

DEHRA DUN, INDIA



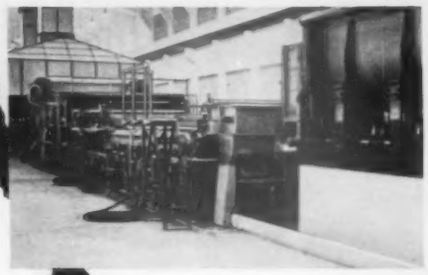
Sandy Hill papermakers excel in construction ideal for each purpose, performance *beyond* that guaranteed--and service that assures uninterrupted operation.

FOLEY, FLA., U.S.A.



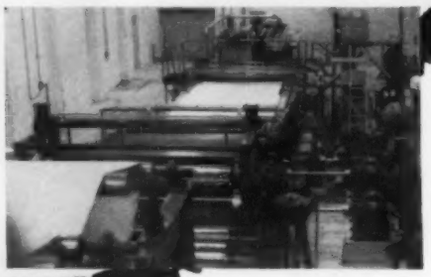
Die Sandy Hill Papierfabrikanten sind hervorragend in der Konstruktion welche jedem Zwecke am Besten entspricht; die Leistung übertrifft jene welche man gewährleistet hat--und die Bedienung besorgt ununterbrochenen Arbeitsgang.

GRAZ, AUSTRIA



산천 지기는 복자만상에 미생지 구조와, 보송이상의 성숙과, 품만없는 작업은 봉사에 서원함은 자랑하는바입니다.

TAEJON, KOREA



Los papeleros de Sandy Hill sobresalen en una construcción que es ideal para cada propósito, un funcionamiento que es *superior* a lo garantizada -- y un servicio que asegura la operación sin paradas imprevistas.

MONTEVIDEO, URUGUAY

papermakers for the world

That's a pretty good description of Sandy Hill pulp and paper mill machinery as well as of the men in many lands who operate it. They make paper for all the world . . . *profitably.*

And that's why, in the language of every papermaking country, you'll hear enthusiastic agreement on the quality of Sandy Hill design, workmanship and service.

THE

SANDY HILL

IRON AND BRASS WORKS

HUDSON FALLS, N. Y.

What's the latest on Pulp Bleaching?

It's the narrowing gap between costs of hydrogen peroxide and other bleaching agents! This renews attention to certain well-known advantages of the all-liquid hydrogen peroxide system:

(1) You handle liquids only.

(2) Feeding, control of feeding . . . every aspect of the system . . . can be completely automatic.

(3) Handling hazards are reduced, often with gratifying effect on plant insurance.

(4) You can store hydrogen peroxide in convenient outdoor tanks saving precious indoor storage space.

(5) We'll send you information on all-liquid preparation systems on request.

Becco procedures—many of them patented—are the result of 30 years' research in the application of peroxygen chemicals to American industry.

BECCO CHEMICAL DIVISION
Food Machinery and Chemical Corporation
Station B, Buffalo 7, New York

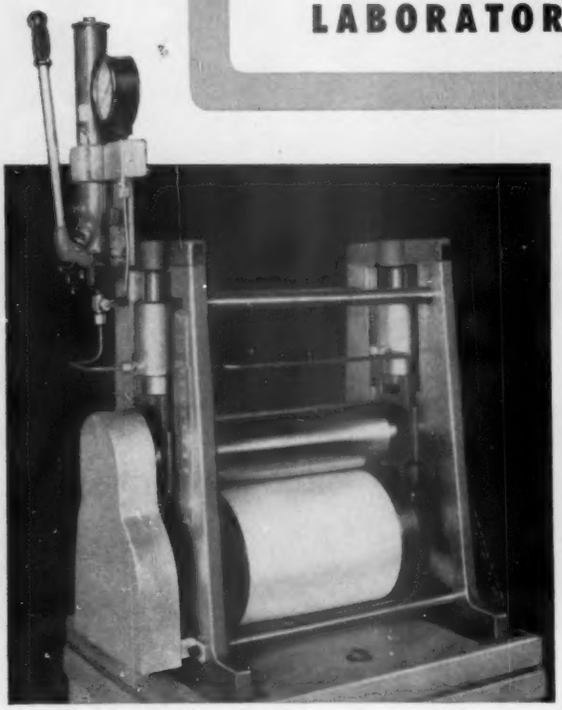
Progress in Peroxygens **BECCO**

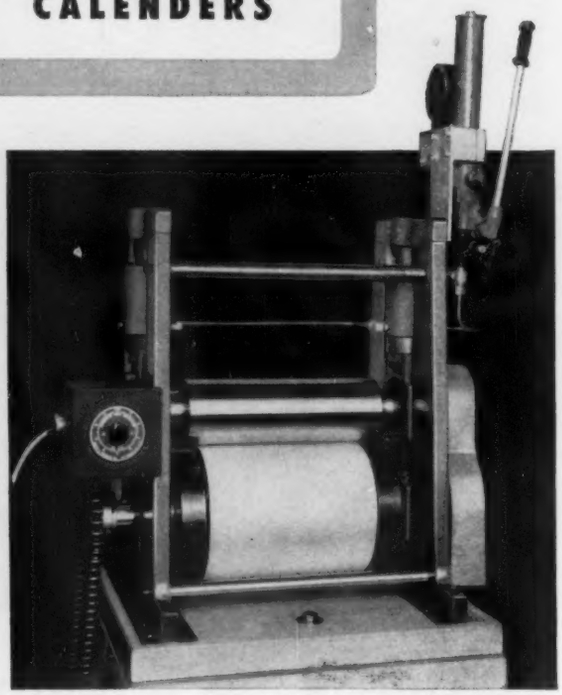
fmc FOOD MACHINERY AND CHEMICAL CORPORATION ®

FMC CHEMICALS INCLUDE: BECCO Peroxygen Chemicals • **WESTVACO** Phosphates, Barium and Magnesium Chemicals • **WESTVACO** Alkalis, Chlorinated Chemicals and Carbon Bisulfide • **NIAGARA** Insecticides, Fungicides and Industrial Sulphur • **OHIO-APEX** Plasticizers and Chemicals • **FAIRFIELD** Pesticide Compounds and Organic Chemicals

PERKINS BANTAM

LABORATORY CALENDERS





Tells you what to expect from a production calender. This small two-roll Laboratory Calender is equipped with hand-operated hydraulic pressure that insures uniform pressure each side of the machine . . . top steel roll and bottom cotton roll . . . both rolls running in anti-friction bearings.

The Perkins Bantam is constructed with steel plate frames, completely machined, and is mounted on heavy hardwood base lined with rubber pad for easy installation on laboratory table. Maximum pressure on top roll, 10,000 lbs. Can be supplied with motor drive.

Top steel roll equipped with electric heating unit.

B. F. PERKINS & SON, INC.

HOLYOKE, MASSACHUSETTS

In cold soda pulp—

H_2O_2 bleaches brighter and whiter

Hydrogen peroxide is a preferred bleach for chip-groundwood pulps because—in addition to its excellent effectiveness—it gives markedly increased reversion resistance.

Unlike other bleaches, the higher you bleach with *hydrogen peroxide*, the greater the resistance to reversion. Still another important advantage . . . H_2O_2 bleaching preserves yield.

Shell Chemical has had cold soda pulp bleaching experience with nearly every U.S. hardwood, including Northeastern, Midatlantic, and Southern species.

Your Shell Chemical representative will be happy to supply you with complete information on hydrogen peroxide bleaching of ultra-high-yield pulp.

SHELL CHEMICAL CORPORATION
CHEMICAL SALES DIVISION

Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis

SHELL

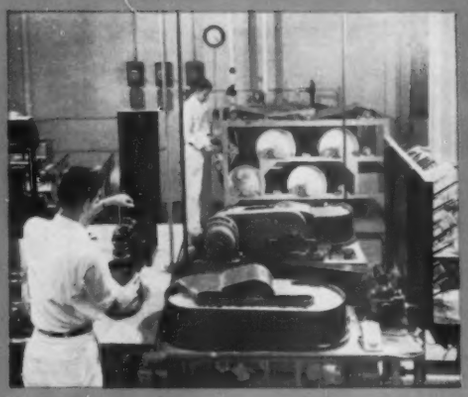
Buckeye looks

TO SERVE THE EXPANDING

LOOKS AHEAD with expanded facilities

New addition, nearing completion, will double Buckeye's wood pulp capacity.

In 1954 Buckeye started production of wood pulp in a modern new plant at Foley, Florida. Now another production unit has been added to assure Buckeye customers an expanded supply of highest quality Southern Pine pulp. This plant, equipped with the very latest and finest machinery, meets today's needs and anticipates tomorrow's requirements. It sets even higher standards for the quality and uniformity of Buckeye Pulps.



LOOKS AHEAD with extensive research

Buckeye spends a higher percentage of sales on research than any other producer.

Buckeye has always considered research all-important, as evidenced by its large and growing technical staff and laboratory facilities. Research in wood pulp goes on continually at the plant in Foley and at the Buckeye Technical Division in Memphis. This research has as its goal still further improvement in the cleanliness, brightness, strength and other specific qualities desired by users of Buckeye Pulp.

LOOKS AHEAD with timber resources

Buckeye has 4 acres of growing timber for every ton of annual pulp production.

Surrounding the multimillion-dollar plant at Foley are more than 800,000 acres of forests, giving Buckeye one of the highest timber-to-pulp output ratios in the industry. This vast tree farm is carefully preserved, harvested and replanted to insure a continuous supply of quality pulpwood to meet the future needs of an expanding paper industry. Buckeye's forestry research, genetics and nursery program is unsurpassed in the wood pulp field.

ahead

PAPER INDUSTRY

FOLEY

Let us tell you how we can
fill your wood pulp needs . . .
now and in the future.

Write or phone
BUCKEYE CELLULOSE CORPORATION
Memphis 8, Tenn.

Wood Pulp Plant at Foley, Florida
Cotton Linters Plant at Memphis, Tenn.

Buckeye Pulp

Bleached and Semi-Bleached Kraft from Southern Pine

WANT TO Reduce Operating Costs?
Increase Production?
Save Manpower?

INSTALL RUGGED DEPENDABLE FABRI DIGESTER VALVES ON YOUR WOODCHIP COOKERS

DESIGNED TO MEET INSURANCE UNDERWRITERS' SPECIFICATIONS

AUTOMATIC CONTROL

• The digester valve can be linked to all other digester valves for completely automatic control from a central station. Available with either hydraulic or electric motor operation.

Fig. 46—Fabri Digester valves furnished in stainless steel body with mild steel flanges or with any combination of materials.

FABRI-VALVE BUILDS THE LARGEST VARIETY OF PULP-STOCK VALVES IN THE WORLD
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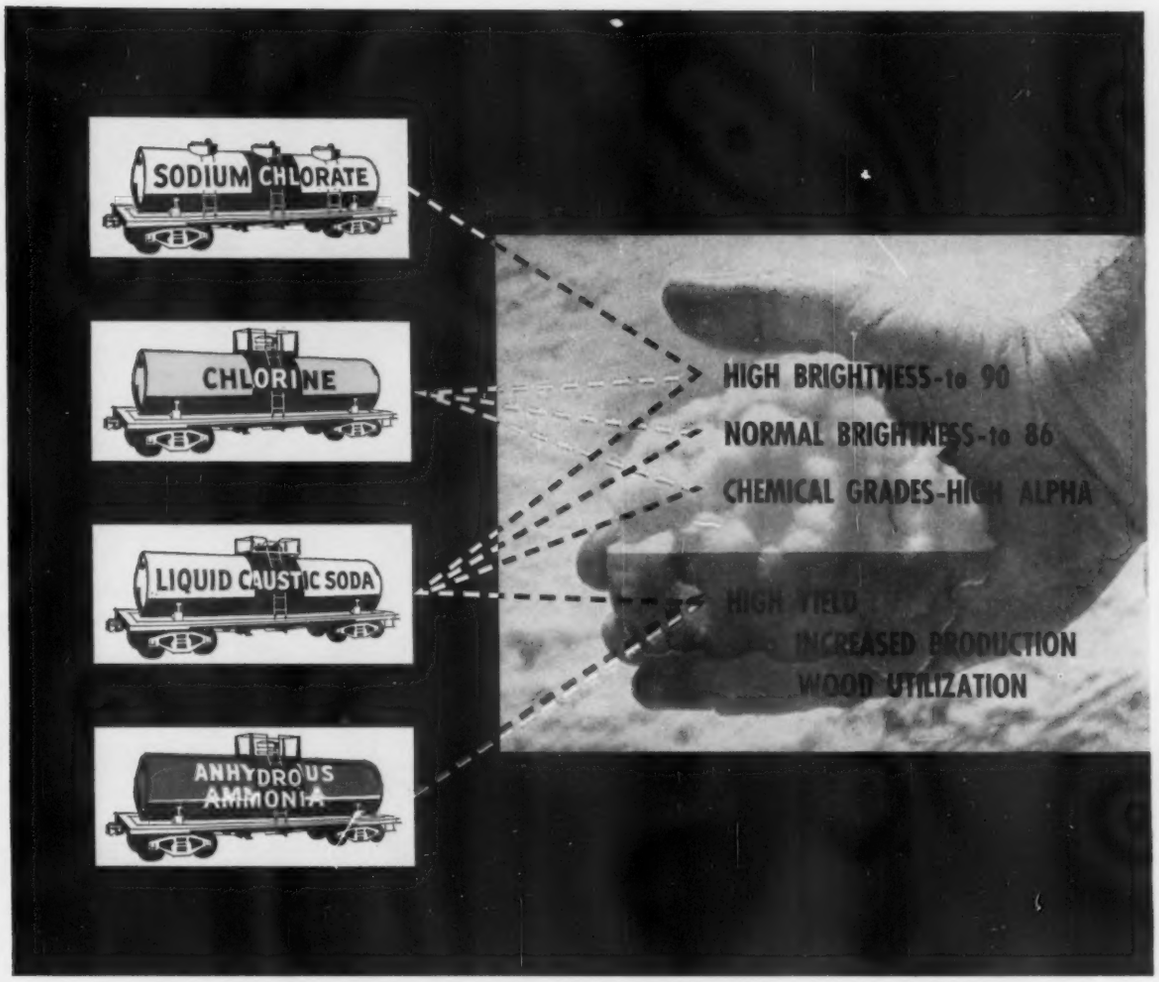

For Greater Pulp Brightness

Nearby PENNSALT Plants mean . . .

REDUCTION OF INVENTORY REQUIREMENTS

ECONOMY IN TRANSPORTATION

DEPENDABLE SUPPLY

PROMPT DELIVERY

GREATER PULP BRIGHTNESS is the trend in pulp manufacturing.

PENNSALT MAKES THIS POSSIBLE by providing basic chemicals.

WHY NOT REQUEST our Chemical Engineers for discussion of your problems in safe and proper handling of these chemicals; and for engineering services connected with chlorine dioxide generation and application — automatic and continuous calcium or sodium hypochlorite systems—dispersed chlorine application to chlorination towers.

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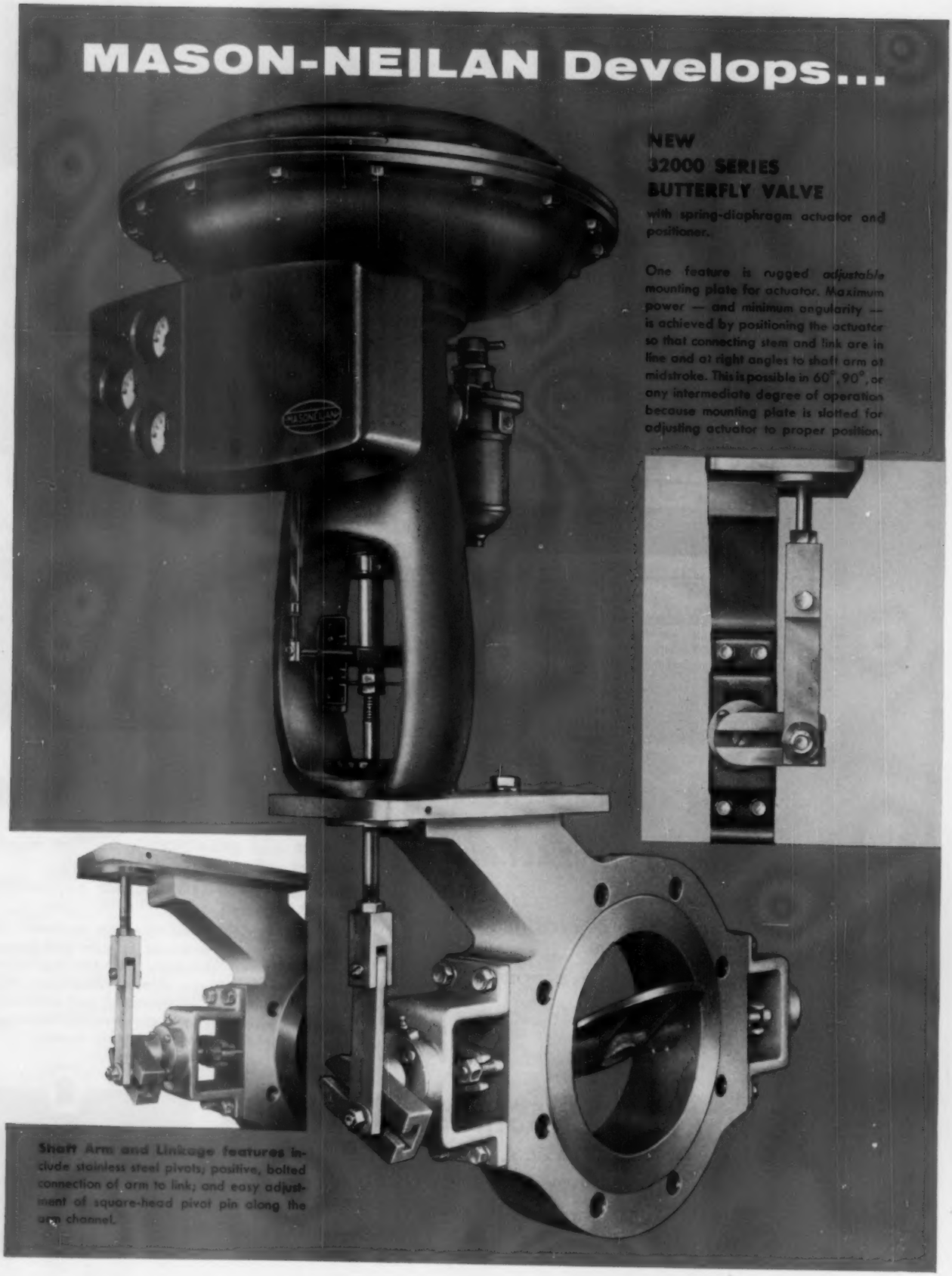
Pennsalt Chemicals®
ESTABLISHED 1850

MASON-NEILAN Develops...



NEW 32000 SERIES BUTTERFLY VALVE

with spring-diaphragm actuator and positioner.

One feature is rugged *adjustable* mounting plate for actuator. Maximum power — and minimum angularity — is achieved by positioning the actuator so that connecting stem and link are in line and at right angles to shaft arm at midstroke. This is possible in 60°, 90°, or any intermediate degree of operation because mounting plate is slotted for adjusting actuator to proper position.

Shaft Arm and Linkage features include stainless steel pivots; positive, bolted connection of arm to link; and easy adjustment of square-head pivot pin along the arm channel.

A NEW DESIGN WITH NEW FEATURES IN BUTTERFLY VALVES

Now, a major advance in Butterfly Valve design! Mason-Neilan's new line of wafer type Butterfly Valves offers an outstanding combination of advantages for improved operation, simplified maintenance and reduced downtime.

The features in this Masoneilan Butterfly Valve line speak for themselves! Simple, attractive and rugged design, mounting flexibility, ease of adjustment, accessibility and maximum actuator power delivery.

Wide range of sizes now available. 32000 Series covers sizes from 2" to 24"; materials of cast iron, cast alloys, or flame cut carbon steel; ratings to 250 lb ASA iron and 300 lb ASA steel; and with Spring-diaphragm, Handwheel or Lever actuation.

Send for Bulletin or contact your nearest Mason-Neilan Representative.

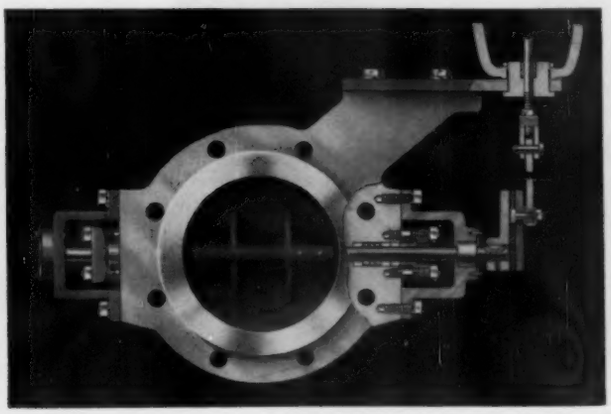
MASON-NEILAN

Division of Worthington Corp.

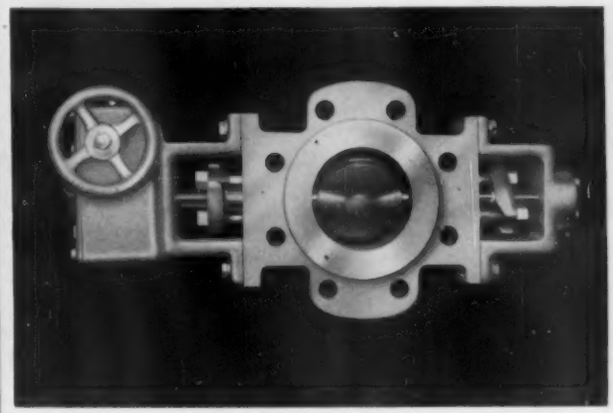
27 NAHATAN STREET, NORWOOD, MASSACHUSETTS

DISTRICT OFFICES OR DISTRIBUTORS IN PRINCIPAL U. S. CITIES

In Canada: Mason-Neilan Regulator Co., Ltd., Brantford, Montreal, Toronto



Maintenance is greatly simplified by bearing brackets sized to permit easy access to packing box and removal of self-centering packing gland and follower. Packing can be added without disassembly of brackets. Packing box may be lubricated, non-lubricated or purge type.



32000 Series Butterfly Valves are available with either Handwheel or Lever actuation. Handwheel types are supplied with a closed gear box, which includes indicator. When used with power actuator, declutching is provided. Travel stops are available.

MINIMUM MAINTENANCE, LONG LIFE ASSURED BY THESE HEAVY-DUTY "BUFFALO" FANS

"Buffalo" Type "BLH" Fan
For Classes III & IV Service

"Buffalo" Type "BL" Fan
For Classes I & II Service

The high performance characteristics of these two outstanding "Buffalo" Fans has resulted in their widespread use in the field of industrial air handling. In addition to offering peak-efficiency operation in their respective classes, both the "BL" and the "BLH" bring you a bonus economy factor of *maintenance reduced to an absolute minimum* throughout a long, productive life. This minimum maintenance factor is directly due to unusually rugged "Buffalo" construction features such as:

HOUSINGS — The heavy gauge sides and scroll are of all-welded construction. Heavy structural steel bracing provides housing stiffness and rigid bearing support. Flanged inlets and outlets give added support.

SHAFTS — Hot-rolled or forged shafts are ground to close tolerances for perfect wheel and bearing fit.

WHEELS — Sturdy backward-curved blades are welded to the die-formed shroud and welded or riveted to the solid backplate. Heavy hubs assure permanent shaft alignment. For higher tip speeds, reinforcing rings provide necessary wheel rigidity.

BEARINGS — Self-aligning anti-friction bearings are designed for continuous operation at maximum tip speed. Horizontally split, ring-oiled, self-aligning, babbitted sleeve bearings are also available.

For full details, contact your "Buffalo" representative, or write for Bulletins F-102 and F-200.

Minimum maintenance is assured by the famous "Q" Factor — the built-in QUALITY that provides trouble-free satisfaction and long life in every "Buffalo" product.

"Buffalo"

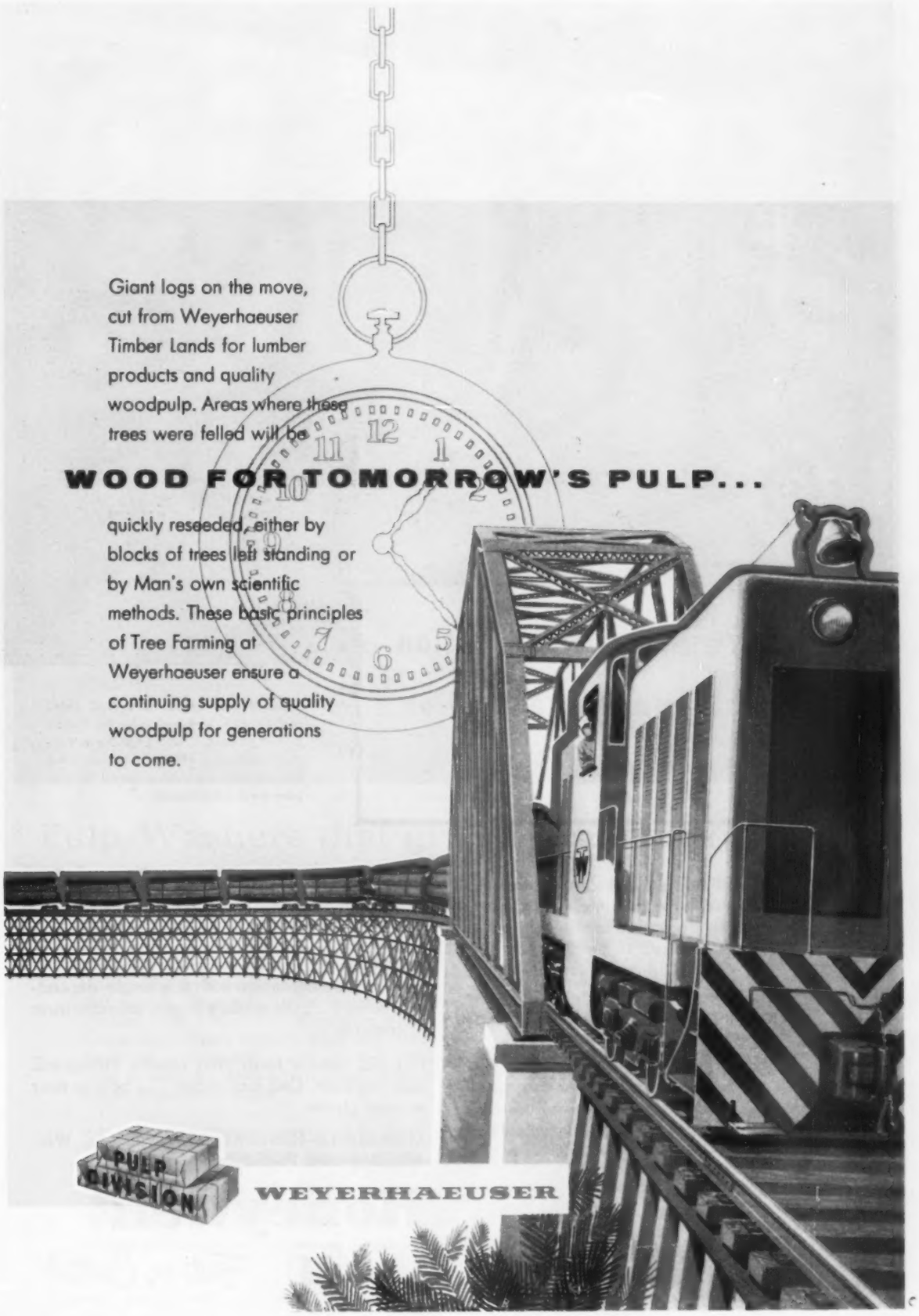
BUFFALO FORGE COMPANY

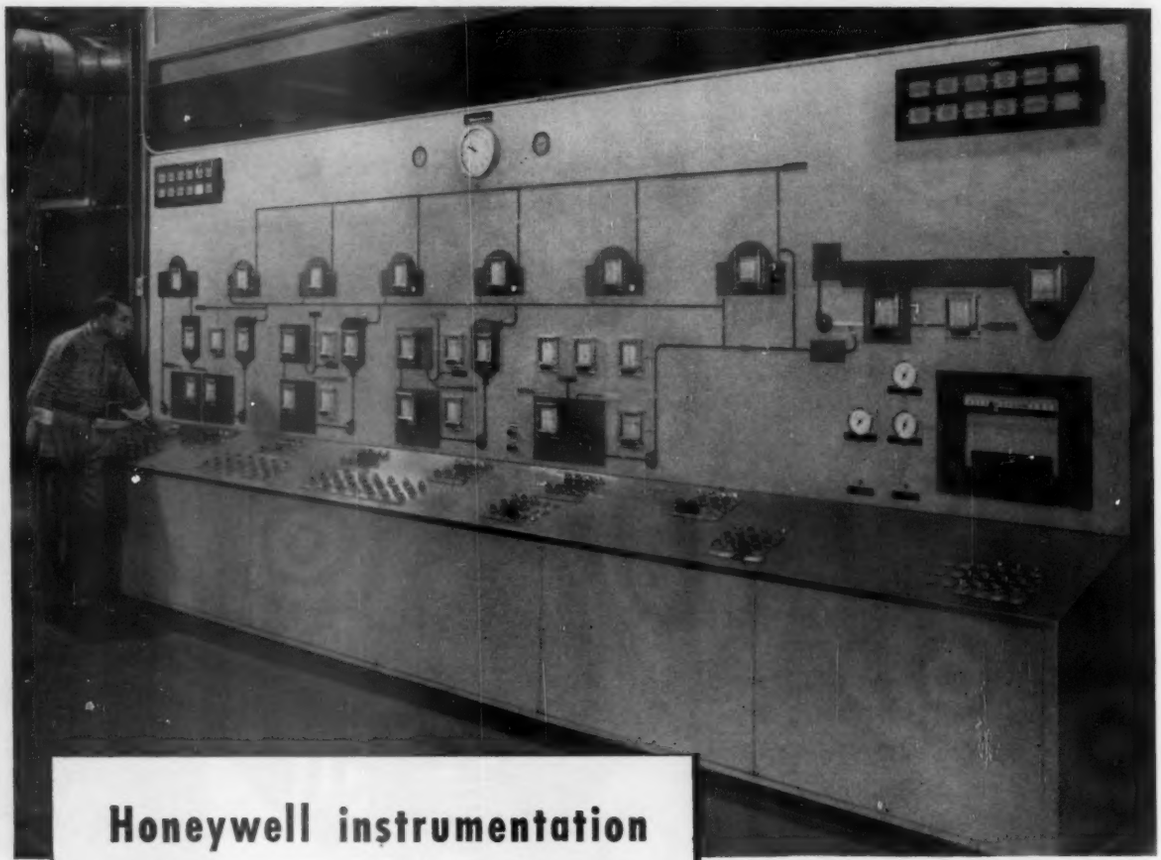
220 Mortimer Street • Buffalo, N. Y.

BUFFALO PUMPS DIVISION, BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING FORCED DRAFT COOLING HEATING PRESSURE BLOWING


Giant logs on the move, cut from Weyerhaeuser Timber Lands for lumber products and quality woodpulp. Areas where these trees were felled will be
WOOD FOR TOMORROW'S PULP...
quickly reseeded, either by blocks of trees left standing or by Man's own scientific methods. These basic principles of Tree Farming at Weyerhaeuser ensure a continuing supply of quality woodpulp for generations to come.
PULP DIVISION
WEYERHAEUSER



Honeywell instrumentation controls stock preparation for new *Clupak** paper

This custom-designed Honeywell panel controls stock preparation for the *Clupak* paper process. It also provides a constant measure of efficiency by recording the amount of power required to prepare each ton of stock.

When West Virginia Pulp and Paper Company recently developed strong, stretchable *Clupak* paper, it turned to Honeywell for the extremely accurate controls required to produce the new product. The custom-designed graphic panel shown above is part of the new system. It guides the stock preparation process with the especially critical accuracy demanded.

Other leading paper producers also rely on Honeywell for accurate, economical control of papermaking processes. Have Honeywell custom-fit a control system to the *exact* requirements of your own mill . . . for either present processes or completely new ones.

You'll save in purchasing, installation and maintenance by placing undivided responsibility for all instrumentation with this single, dependable source . . . the world's largest manufacturer of controls.

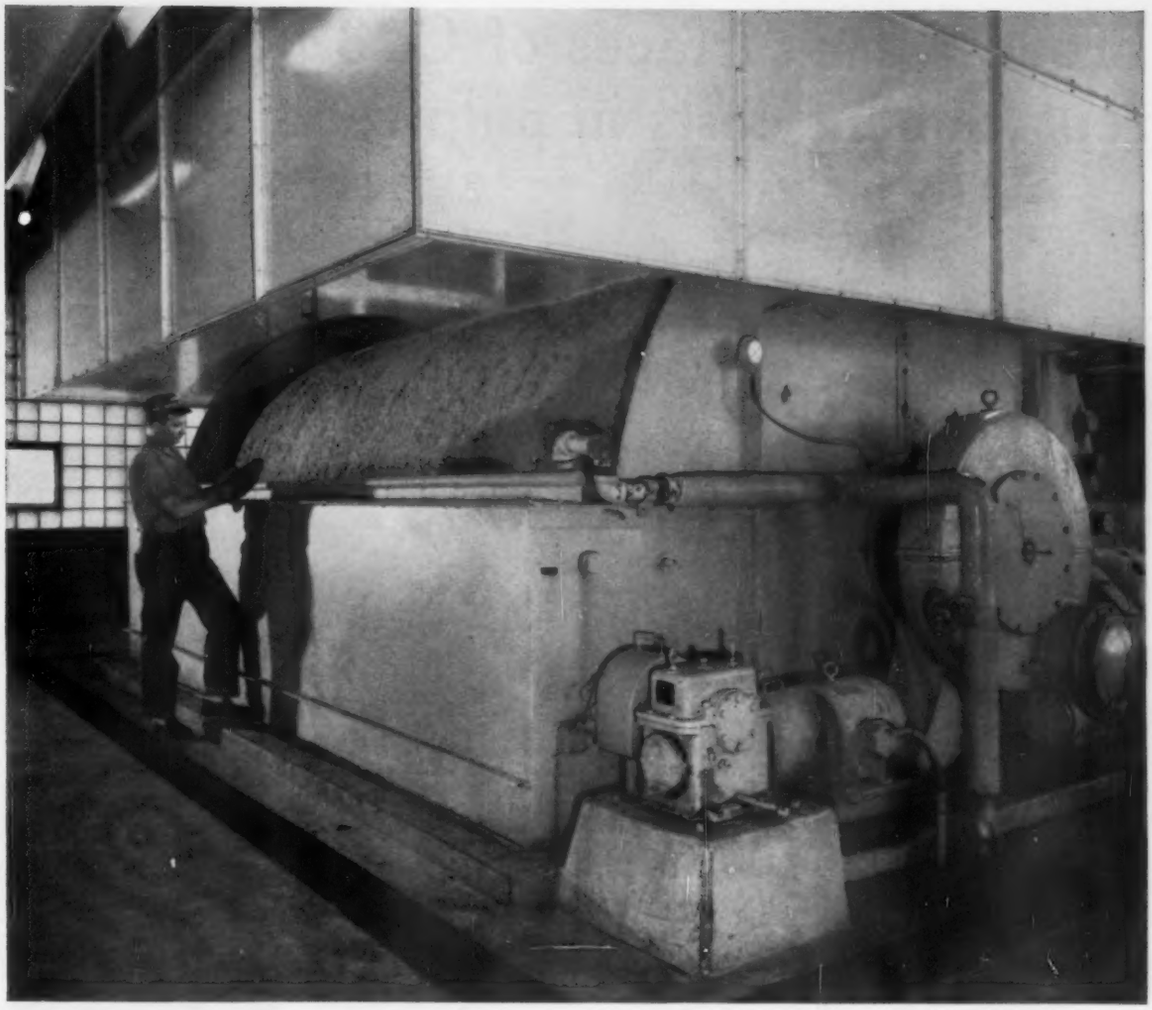
Get full details from your nearby Honeywell field engineer. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

*Trademark of *Clupak*, Inc., a company organized jointly by West Virginia Pulp and Paper Company and Cluett, Peabody & Co., Inc.

Honeywell

H HONEYWELL *First in Control*



Pulp Washers that give a "Shower of Value!"

Essential to the economical production of quality paper, a well-washed pulp with low dilution is mandatory at Thilmany Pulp and Paper Company.

That's why the Kaukauna, Wisconsin papermaker relied on Swenson to provide the washers that furnish clean pulp at the lowest possible dilution. Now, with its line of Swenson 4-drum, 5-stage brown stock washers, Thilmany reports improved performance . . . *and* marked reductions in operating costs accompanied by an increase in quality of paper.

Long-time favorites, Swenson Pulp Washers are designed and engineered specifically for brown stock washing. Send for your copy of the interesting new color Bulletin 243, "Processing Profiles"—a tour of Swenson Processing Equipment in action at Thilmany and many other installations.

Swenson Evaporator Company, 15632 Lathrop Avenue, Harvey, Illinois.

87 OF AMERICA'S "FIRST HUNDRED" CORPORATIONS ARE WHITING CUSTOMERS

SWENSON

Proved Engineering for the Process Industries Since 1889

A Division of WHITING Corporation

WHITING—MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILES; FOUNDRY and RAILROAD EQUIPMENT

Broad wear-surfaces of C-132 chain cut replacement costs in pulpwood handling

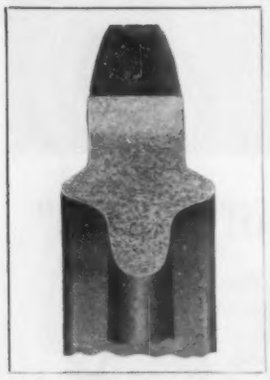
PULPWOOD LOGS ARE PULLED FROM HOT POND by a 20-ft. wide jackladder at a Wisconsin paper mill. Jackladder uses Link-Belt C-132 chain.

Rugged Link-Belt chain withstands punishing impact, abrasive abuse

Here's a chain you can count on for long, dependable service on even the most grueling jobs. With its broad top and bottom surfaces, Link-Belt C-132 chain is particularly resistant to the sliding wear encountered on carrying and return runs of drag conveyors. This high wear resistance pays off in low maintenance, minimum shutdowns.

C-132 center links are simple, rigid and rugged castings. Sidebars are made from selected steel. Steel connecting pins are locked in the sidebars . . . only center links, which have generous bearing area, rotate on the pins.

Many center link and sidebar attachments are available for Link-Belt C-132 chain. Coupler links, which permit assembling the chain in odd pitch lengths, can also be supplied.



File-hard surfaces of Flint-Rim sprockets assure long wear-life

In manufacturing Flint-Rim sprockets, Link-Belt uses a high-grade, fine-grain, alloyed cast iron—chilled to impart a file-hard surface on the teeth and root diameters where contact is made with the chain. This hard surface, together with the fine pitch accuracy attained in this form of casting, maintains efficient, dependable performance of chain and sprockets . . . prolongs chain life.

In addition to cast iron and Flint-Rim, Link-Belt offers a complete line of sprockets in cast-steel, cut-tooth and demountable-rim construction.

Link-Belt C class chain ideal for both conveyors and elevators

Popularity of C class chain is due to versatility as well as high strength and durability. Cast center links and steel sidebars form an inexpensive medium for both elevating and conveying. And if you have extra-severe needs, C class chain can be tailored to meet them exactly. For example, center links are available in Promal and file-hard Promal as well as malleable iron. Specially treated joints and special hardening in localized areas give greater wear life. Also, a wide variety of attachments adds to application flexibility.

FOUR-STRAND C-132 CHAIN CONVEYOR transfers logs from jackladder and slasher table to distributing chain conveyor at this mill. Chain is equipped with F-27 attachments.

K-9 ATTACHMENT on this C-132 chain supplies additional broad sliding surface.

HEADQUARTERS for Link-Belt products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor. Refer to the yellow pages of your local phone directory.

LINK-BELT

CHAINS AND SPROCKETS

14,891

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

Get efficient loading on any footing

...in any weather...with a one-man "crew"

You "semi-skid" with no strain on the tractor, let big, heavy-duty skid-shoes be the "buffers." Impact forces of rough-ground travel are gentled 67% or more by patented, shock-swallowing Hydro-Spring!

With selective precision dumping control you release logs one at a time or all at once. Top grab-arm is controlled by a third valve of the hydraulic system. This valve is standard equipment and can also be used to control rear-mounted road-working equipment.

In snow three feet deep with pulpwood piles frozen tight...or in rain-soaked woods with stocks mudded-in ...in any weather...on any footing...the sure-going International Drott Skid-Grapple can give you top pulpwood loading efficiency. You need only a one-man "crew" to make big cash savings. Many owners report saving more than $1.00 per cord on production costs with a TD-9 Skid-Grapple.

You just push the Skid-Grapple's lower prongs under the frozen or mudded-in wood piles. Then, clamp onto the load securely with the exclusive top grab-arm. Now, apply patented triple-power pry-over-shoe break-out action together with ground level roll-back.

Using lift-frame mounted skid-shoes, you "semi-skid" the big grapple loads over any soil or terrain condition quickly, easily, and at low cost to truck or pile. Here again, positive, grab-arm load control speeds unloading, lets you release all the wood at once or a "stick at a time."

See how exclusive TD-9 Skid-Grapple advantages let you load up to 240 cords daily! There's an International Drott Skid-Grapple size to fit your pulpwood loading operation. See your International Drott Distributor for a demonstration of the size you need.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

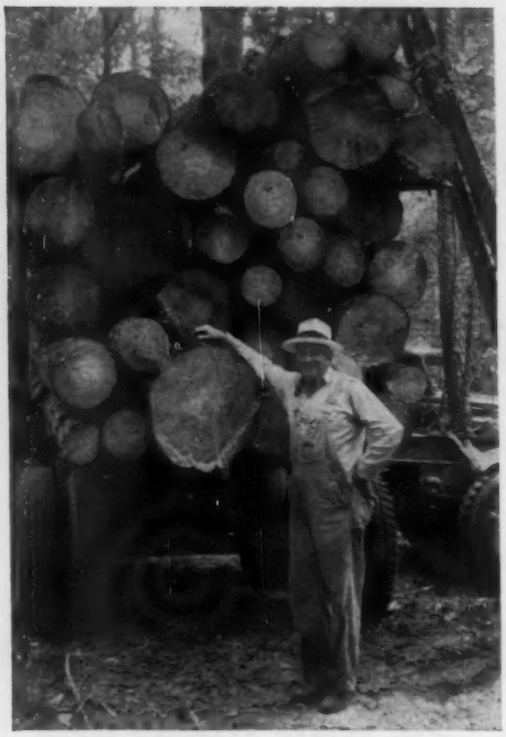
INTERNATIONAL®
DROTT®

ARKANSAS LOGGER:

"MY FORDS LOAD 5 TRUCKS A DAY...

handle anything we can hook onto!"

Carl Barnes of Fordyce, Ark., uses two Ford Tractors to snake logs out of the woods, and a third for stacking and general work at the landing. "They're easy to operate," he says, "and they've got the right kind of power for this work—handle anything we can hook onto, up to six logs per load."



"BUILT TO TAKE THE ROUGH STUFF"

"We've got a total of over 3,000 work hours on the three Fords," Mr. Barnes reports, "and the way they're holding up is really fine. We even use them to push and pull the loaded truck through new roads and soft going . . . use one Ford equipped with blade to maintain roads through the woods."

"DEALER SERVICE? EXCELLENT!"

"He's really on the job," says Mr. Barnes, "makes the 70-mile round trip any time I need him." Ford users everywhere report the same fine service. Your dealer right now is showing a great line of new Ford gasoline, diesel and LP-Gas tractors. Stop in and see them, or write to Industrial Sales Department, Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan.

HANDLE ALL THESE JOBS AND MANY MORE . . . AT LESS COST!

YOU SEE MORE FORDS BECAUSE THEY SAVE MORE MONEY!

best available chemical for retarding forest fires!

HERE IS YOUR NEWEST PROVEN FIRE-FIGHTING TOOL. FIREBRAKE is the unique fire retardant that's making history. FIREBRAKE has been put into strategic action against wild flames on remote rugged terrain within minutes. It has been used to knock down and hold small fires and, in other cases, to establish chemical fire-breaks for the close support of ground crews. So you see, whether FIREBRAKE is cascaded from the air, or utilized for ground attack, it's effective... and it buys time!

FIREBRAKE (sodium calcium borate) is quickly mixed in the field with water, as a slurry, and remains stable. White in color, it is easily discernible after application because it clings to whatever it touches as a protective coating which stubbornly resists flame. Economical FIREBRAKE is nonpoisonous and non-irritating. Find out how valuable FIREBRAKE can be to you... write for literature.

United States Borax & Chemical Corporation
Pacific Coast Borax Company Division • Agricultural Sales Department
630 SHATTO PLACE • LOS ANGELES 5, CALIFORNIA

HAVE YOU TRIED THIS NEW CLEARING PACKAGE?

HOW IT WORKS! Mounted on a C-frame to form a 28-degree angle with the front of this Cat D7 Tractor, the Rome K-G Blade has a stinger on its left end that projects about 30 inches beyond the cutting blade itself. The stinger and cutting edge are made of armor plate and are extremely sharp. Small trees can be sheared at a single pass. Clearing larger trees, the D7 hits the trunks with the stinger at a height of 3 to 5 feet above ground level. The stinger pierces and weakens the trunks, making it possible to push the trees over easily. Stump tops are sheared at ground level, often in one pass. Standing live oaks, with trunk diameters of 81 inches and up, have been cleared by a Cat Diesel Tractor with K-G Blade.

HERE'S a tool that's winning fast acceptance for low-cost forest site preparation. It's a Cat Diesel Tractor equipped with Rome K-G Blade. The D7, owned by the West Virginia Pulp and Paper Co., is clearing a hardwood area near Summerville, S. C. The cut-over area is left until ready to burn, then planted with 700 trees to an acre with an 8′ x 8′ spacing. R. E. Haynes, Woodlands Division Manager, says: "We think it is the best tool we have found—a more effective way of getting the job done in this type of clearing."

This type of clearing is tough work, and the D7 is ruggedly built to stand up under it. For example, the heavy-duty frame and steering clutch case unit is made of fabricated steel. The track shoes, hardened by a special process, outwear ordinary shoes. The oil clutch, an exclusive Caterpillar development, gives up to 1,500 hours without adjustment. And the sturdy 128 flywheel HP engine operates on low-cost fuel without fouling. Because of these and other heavy-duty features, the D7 can deliver more work at lower cost with less down time than any machine in its power range!

For facts and figures about Cat Diesel Tractors on site preparation, see your Caterpillar Dealer. Taken from an actual job study, these facts provide a clear comparison of the effectiveness of different machines and methods on tree and stump shearing, raking and windrowing, chaining, stump treatment and harrowing. Your Caterpillar Dealer will be glad to show them to you. He'll demonstrate, too. Call him today!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

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HEAVY-DUTY WOODS EQUIPMENT FOR THE HARD WORK

Keep yourself in the money-making picture with the HOMELITE 7 21

7-Month Guarantee

Put yourself and *keep* yourself in the money-making picture with the Homelite 7-21 gear-drive chain saw.

You put yourself in the money-making picture because the 7-21 cuts so fast so well. It fells trees up to 7 feet in diameter, cuts 20" trees in 18 seconds. It weighs only 21 pounds* and is easy to handle in even the roughest terrain. You have a choice of straight blades from 14" to 60" to match any cutting job. And for special cutting jobs, there are clearing bar, brush cutter, and 14" and 18" plunge-cut bows available.

You keep yourself in the money-making picture because the Homelite 7-21 stands up under day-in-day-out cutting. With the Homelite Magic 7 features . . . (1) new cylinder design has 12% more cooling area (2) tough, drop-forged, counter-balanced crankshaft gives smooth performance (3) revolutionary intake valve increases engine power (4) finger-tip plunger pumps oil directly to chain (5) automatic governor cuts engine wear (6) automatic clutch stops chain when throttle is released (7) large air filter keeps out sawdust, dirt, snow.

And the Homelite 7-21 is guaranteed for 7 months!

*less bar and chain

Gear-drive

21 pounds*

Cuts 20" trees in 18 seconds

Have a free demonstration at your nearest Homelite dealer.

Find Your Homelite Dealer In The 'Yellow Pages'

Manufacturers of carryable pumps, generators, chain saws, blowers

HOMELITE
A DIVISION OF TEXTRON INC.
7709 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

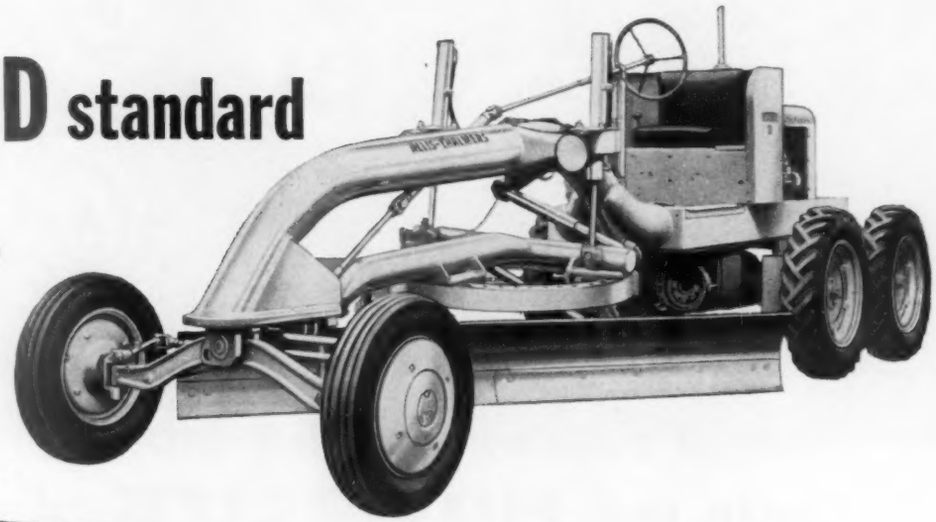
...for big economy on maintenance

GET THE ALLIS-CHALMERS

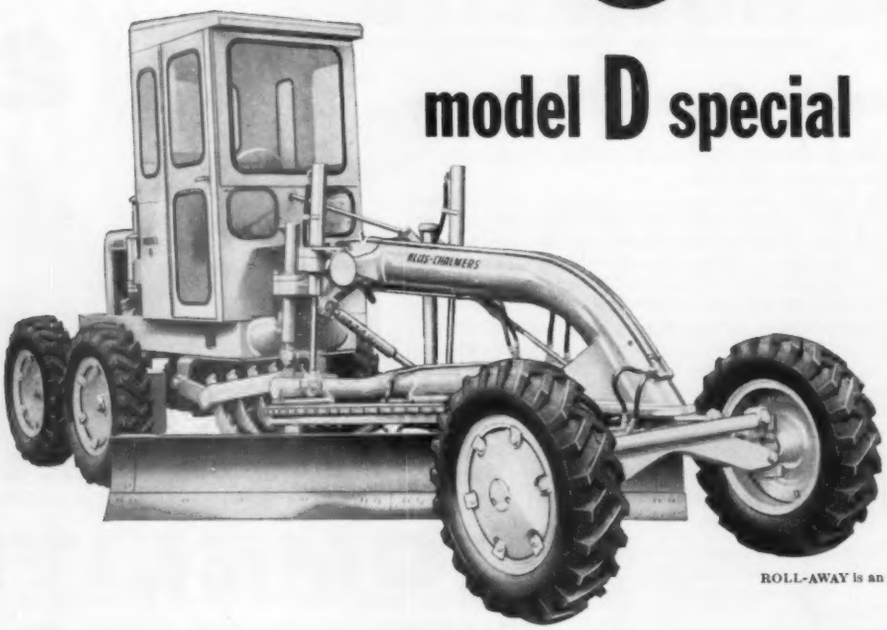
Here's the original low-cost motor grader with big-grader design and performance advantages. The Model D handles so many jobs so well, you have to see it at work to convince yourself. Your Allis-Chalmers dealer can arrange a demonstration. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

model D standard

50 hp
Approx. weight
8,800 lb (gasoline)
Approx. weight
9,350 lb (diesel)



model D special



50 hp
Approx. weight
10,900 lb (gasoline)
Approx. weight
11,450 lb (diesel)
4 forward speeds to 25 mph (approx.)
1 reverse speed to 3 mph (approx.)
All-steel cab*
Shiftable moldboard*
Hydraulic scarifier*
Leaning front wheels*
Power circle turn*

*Also available with the model D standard as optional equipment.

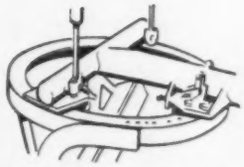
ROLL-AWAY is an Allis-Chalmers trademark.

and construction work

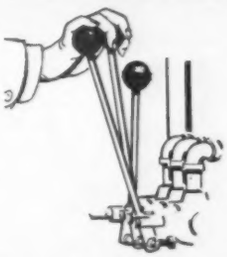
MODEL D MOTOR GRADER

many production-boosting advantages

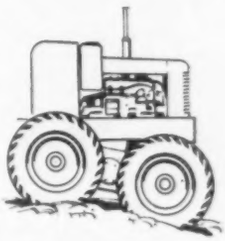
The ROLL-AWAY moldboard rolls dirt up and ahead to eliminate packing, reducing friction . . . gives you more performance per horsepower, more production per gallon of fuel.



Revolving circle and heavy tubular drawbar provide exceptionally stable moldboard mounting.

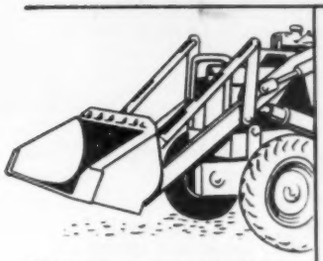


Convenient hydraulic controls, easy to operate. Two levers fit into one hand to control circle lift.

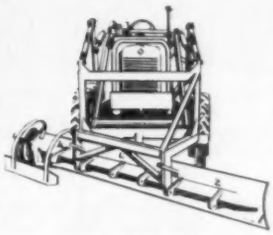


Positive tandem drive gives you four driving wheels under the heavy end of the grader.

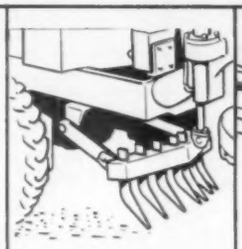
many job-multiplying attachments



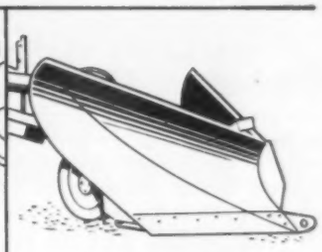
⅝-yd rear-mounted loader



Interchangeable shoulder maintainer



Midship-mounted scarifier

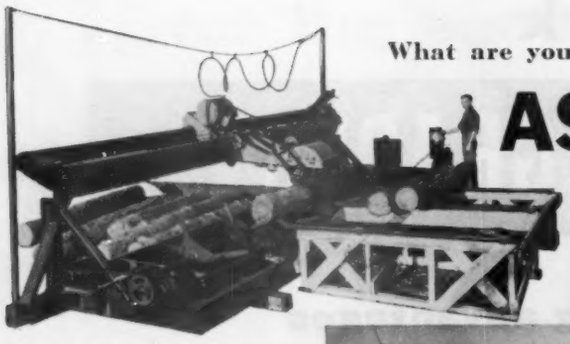


Blade and V-type snowplows

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

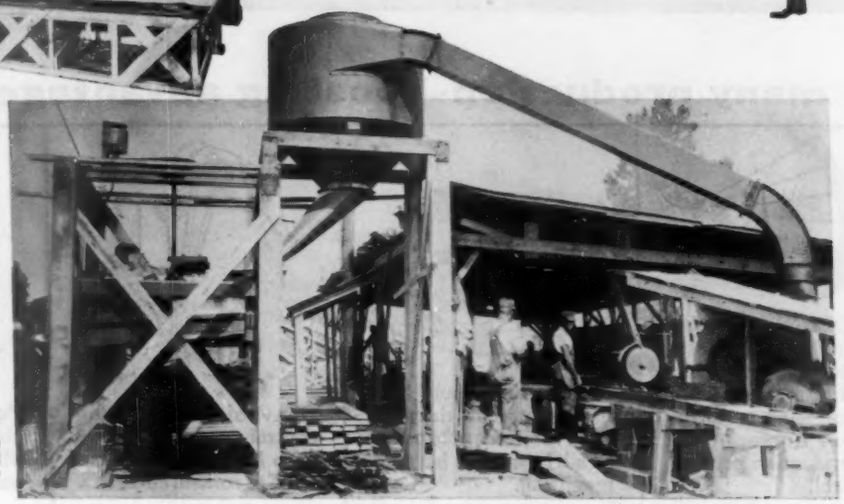
Look ahead... *move ahead*...and stay ahead

with ALLIS-CHALMERS



What are you getting from your scrap . . .

ASH or CASH?



CHIPPING FOR A PROFIT—

Molpus Lumber Company, Philadelphia, Mississippi, cutting from 2 to 2½ MBF of lumber per hour, recently installed a woodwaste utilization setup consisting of Soderhamn DC-6 Log Barker, 48" Horizontal Chipper, and CS-20 Chip Screen. The installation was made at total cost of less than $27,000 excluding high pressure blower system to blow chips 620 ft. to open type gondola car.

Mr. Molpus says of this installation, "We believe this is the lowest cost barker-chipper-screen installation on the market, and it should pay for itself within one and one-half to two years."

IF you're burning waste — slabs, edgings, trimmings — you're missing out on real profits. Here's a minimum-investment installation that will make you

$13,578 to $55,515 profits annually — depending on size of your mill!

A woodwaste utilization installation is no longer just for the "big boys" — this new Soderhamn combination will put you "in the chips!" Efficient, clean barking and chipping . . . accurate, dependable screening — all to most rigid pulp mills' specifications.

TOTAL INVESTMENT LESS THAN $25,000

This is actually the lowest price heavy duty installation on the market. Three precision Soderhamn machines, designed for long life and economical, dependable operation . . . minimum labor, minimum horsepower requirements, minimum maintenance. You can't go wrong with Soderhamn — the line that is setting new standards for the industry.

- *Soderhamn also makes the lowest cost rotor barker on the market, considering installation and labor costs.*

NEW DC-6 LOG BARKER. Will handle efficiently logs from 5" to 36" diam., 6' to 22' long. Production up to 45,000 bd. ft. (Doyle scale) per shift may be reached under ideal conditions, although installation is profitable for mills cutting as low as 7,000 bd. ft. a day.

Interchangeable heads — flail scraper, abrader, and planer types — make it easy to meet all bark specifications. No conveyors needed — skids or live decks may be used for both infeed and outfeed; logs are fed sideways into the barker, and hydraulic kickers discharge barked logs to the rear. Kickers properly spaced to insure support for random length logs.

All movements controlled from one simple station, including start-stop buttons for all motors. Heavier construction than any other low-cost barker on the market. Weight, approximately 12,000 lbs.; cost, complete with all motors, $8,900.

Individual literature available.

48" HORIZONTAL CHIPPER. Adaptable to ground level mill, so no elevated conveyor required. Furnished with 3 high chrome alloy knives and special Soderhamn anvil knife of new, heavier design, affording four usable hard-faced cutting edges. Knives bolt into disc. Chip size readily altered. Average production, 20 cords per hour — more than ample for one barker and screen; weight, approximately 6000 lbs.; HP required, 75-125 depending on conditions; cost, $6,900 plus motor. (Motor can be quoted separately.)

Individual literature available.

CS-20 HORIZONTAL ROTATING CHIP SCREEN. Advanced design Chip Screen insuring quality production of chips — a *must* in today's market conditions. Delivers uniform chips, free of splinters and sawdust. No vertical movement — oversize chips and splinters cannot jump through top screen plate as on conventional chip screen. Chips, sawdust and oversize pieces discharged separately. Requires no ground foundation — suspended from cyclone supporting structure. Average production, 5 cords per hr.; weight, approx. 1600 lbs.; cost complete with 2 HP 1800 RPM motor — $2,200.

Individual literature available.

SODERHAMN MACHINE MANUFACTURING COMPANY

Talladega, Alabama

West Coast: Suite 3, 9442 S.W. Barbur Boulevard, Portland, Oregon.

East Canadian Representatives: Forano Limited, Montreal, Canada.

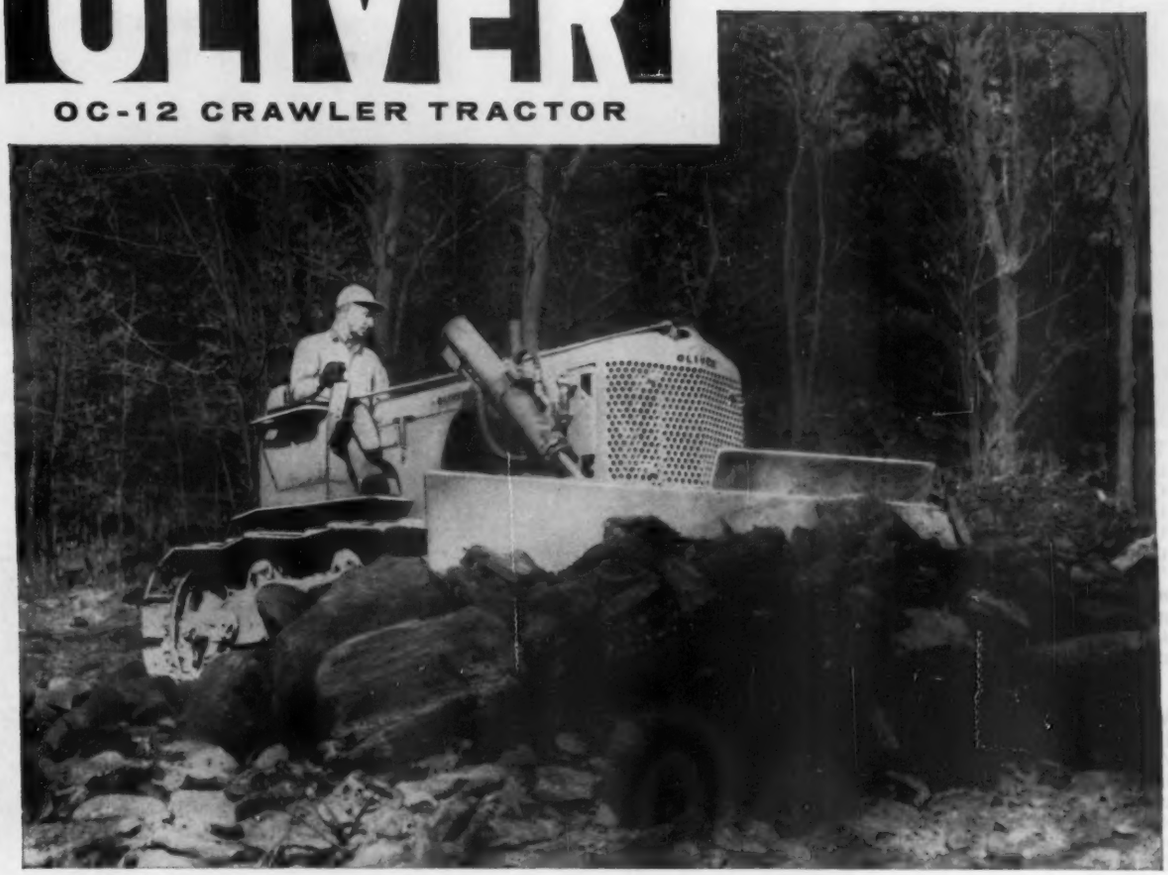
DID YOU GET YOUR COPY?

This brochure describes this 3-machine installation and tells how to figure your profits in advance . . . how to get in the chip business. Write for it now!

SODERHAMN — FIRST NAME IN WOODWASTE UTILIZATION EQUIPMENT

OLIVER

OC-12 CRAWLER TRACTOR



"No trouble in two years of woods work ...the OC-12 is just the right machine"

Perfect helpmate to the OC-12 for skidding work is the popular Oliver OC-4. It has fully protected crawler design with four lower track rollers for maximum ground contact, greatest traction. Four-speed transmission gives selective speed range from low 1½ m.p.h. to lively 5½ m.p.h. Mounts any attachment you want: winch, dozer, loader and others.

Getting out a million feet of lumber a year means putting in quite a few miles of woods roads. The best way to do it (and many more jobs), Ketchum & Bown of Hillsgrove, Pennsylvania, have found, is with the Oliver OC-12 dozer. They report:

"Under our rocky conditions, we build a mile-long road in eight hours. It's a real all-weather tractor; last year due to snow we definitely would have lost over 200,000 feet of lumber if it hadn't been for the OC-12. In the two years we have had it, we haven't had any trouble—it doesn't even use oil between changes. The OC-12 is easy and comfortable to operate."

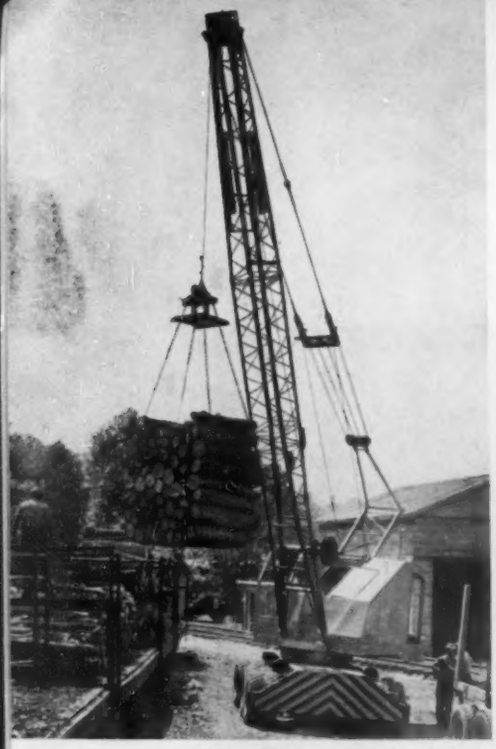
In addition, these partners use their OC-12 for clearing, grading, skidding and truck assists. At all these chores, the OC-12 proves it is the best crawler of its size for woods work with features like these: POWER-TURN steering...high clearance...extra large clutches... smooth handling...gas or diesel power.

Try the OC-12 yourself at your Oliver distributor's soon.

OLIVER **THE OLIVER CORPORATION**

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment



This 30-ton capacity American 300 Series Self Propelled Crane transfers up to 7½ tons of pulpwood from truck to flatcar on every cycle—unloads a truck in 3 minutes! "Fast, efficient, dependable and mobile" sums up owner and operator comments about the complete American line of Cranes and Excavators.

Working a clamshell bucket is just one of many jobs American Locomotive Cranes handle with cost-saving efficiency. This self contained crane also works with hook, magnet, orange peel or grapple fronts—has power to switch railroad cars, too!

TRIGGER FAST AIR CONTROLS BOOST CRANE'S OUTPUT 20%

Fast, highly responsive air controls actually increase the daily production output of big American DiesELectric* Locomotive Cranes by 20%! Leading firms in the country's heavy industries have swung to American for their volume materials handling jobs. These cost-conscious firms have learned that the American's patented diesel-electric power system cuts operating costs sharply. Electrically driven trucks provide smooth switching and car spotting power while reducing maintenance costs up to 50%! Dependable diesel power on the machinery deck results in low cost materials handling power.

A variety of fronts . . . hook, clamshell, magnet, orange peel or grapple . . . provides every industry with a versatile, heavy duty, high production machine that will pay for itself in a hurry.

If you're interested in boosting handling volume while trimming costs, investigate American's new concept in crane design—the DiesELectric Locomotive Crane! Specifications on this complete line offering capacities from 25 to 130 tons are available immediately by writing:

*Trademark

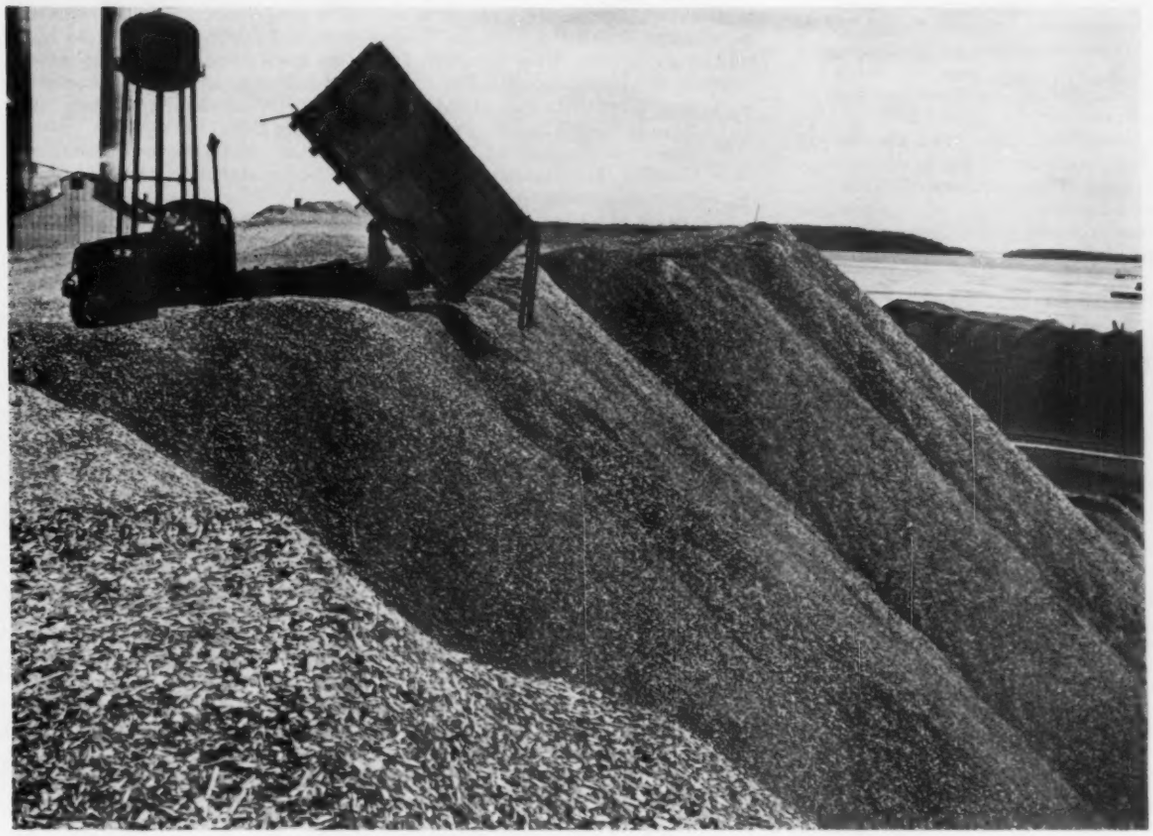
EXCAVATORS-CRANES to 2 yds.-50 tons
LOCOMOTIVE CRANES to 130 tons
DERRICKS-HOISTS to 800 tons
REVOLVER CRANES to 400 tons

AMERICAN HOIST
and Derrick Company
St. Paul 7, Minnesota

AMERICAN HOIST PACIFIC COMPANY
Special materials handling equipment

CROSBY-LAUGHLIN DIVISION
Drop forged fittings for wire rope-chain

A limited number of locomotive cranes available for rental service



STORAGE COLOSSUS at Crown Zellerbach Port Townsend, Wash. div. has 200,000-unit capacity.

Outside Chip Storage

is increasing as mills learn how to cope with degradation factors, how to prepare areas and best recovery methods

By LOUIS H. BLACKERBY

Western Editor, PULP & PAPER

—Portland, Ore.

• Pulpwood – conventionally visualized stacked in 4 or 8-ft. cords or as logs ranging up to 48 ft. or so, varying with geographical location and local conditions—may instead become commonplace as stored chip piles in producing areas.

Such piles are already commonplace at West Coast mills—where this sort of stockpiling "grew up" during the past six years.

More western industry operations are going to outside storage. Four mills (three located in Oregon, one in British Columbia) inaugurated piled chip storage in 1957, and two in Washington and one in Oregon started their initial chip piles during the first half of 1958.

Increased interest is already noted in the Southern states and Eastern Canada in opportunities available to the industry through stockpiling pulpwood outdoors in chip form.

Although open chip storage in the West is predominantly associated with stockpiling pulp chips produced from sawmill and veneer plant residue wood—and to a minor degree from material salvaged in the woods operation—pulp chip piles may be feasible for mills which are dependent on raw product wood derived directly from the forests.

1¼ Billion Ft. Saved Annually

So rapid has been the trend in the

West to utilizing chips made from residue wood in this area that an estimated 1¼ billion bd. ft. of timber is saved from cutting each year in Oregon and Washington. This has enhanced the effective timber supply in Oregon alone by more than 100 billion feet, according to W. D. Hagenstein, exec. vice pres. of Industrial Forestry Assn. Salvaged pulp chips account for the major share of this resource extension. With few exceptions, such as the big integrated operation of Weyerhaeuser Timber Co. at Longview, Wash., where materials remain under roof subsequent to the point beginning processing, the user mills have installed outside storage facilities for wood arriving at the pulp mill in chip form.

Five Main Considerations

Foremost considerations by firms contemplating going to this wood inventory method include (1) degrade, (2) area preparation costs, (3) handling costs, and (4) length of time chips can feasibly be stored.

Consulting western operators making extensive use of outside chip storage, PULP & PAPER encountered keen interest in the subject. Although practically every one of them is concerned about in-storage degrade, only about one out of every six user mills has been able to note any indication of such. None of the consulted mills rates this as an important problem and those who have detected signs of in-storage fall-off qualify such reports with one of the following limiting observations: (1) color only (sulfite mill), (2) minor yield reduction—no strength loss, (3) not a serious problem.

Even though not a single reporting mill has encountered important degradation factors, practically all express active concern regarding this possibility and considerable study is currently devoted to it at several plants. Actually, there is some indication that the pulping characteristics of chips improves as result of aging while in outdoor storage and management in at least one mill takes advantage of this factor in its production program.

South and East Ask About West's Experience

Southern and Eastern mills are showing more and more interest in outside storage of chips.

"It's one of the hottest subjects in the South today," one pulpwood engineering expert told PULP & PAPER. "Bring us some information on what they have learned out on the West Coast. We want to know about their experiences."

So, several weeks ago, PULP & PAPER's Western Editor, Louis H. Blackerby went after this information, conducting a survey of all the West Coast mills which have pioneered in this new method of storing chips.

He asked questions about degradation, weather conditions, economics, material handling. His answers in this article will be useful to any mills considering outside chip storage.

The swing to chips is not confined to Pacific Coast mills. Although this area consumed more than 2,830,222 cords of chips in 1957, the South is coming up fast with some 936,410 cords. The U.S. consumed a total of 4,276,846 cords of chips in 1957.

Interest is not confined to the use of chips from wastewood. Southern mills are seriously mulling the feasibility of chipping all incoming roundwood in the mill yard and then storing the chips outside.

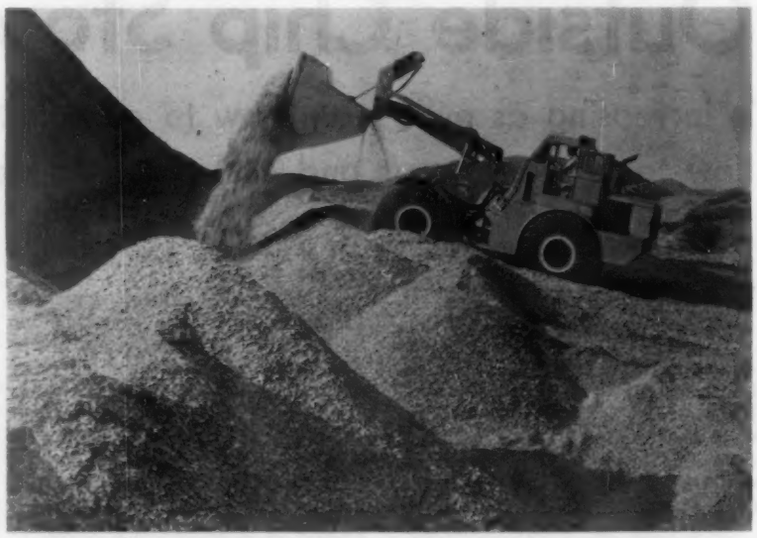
Anticipated benefits, according to a report from the American Pulpwood Assn., are to eliminate roundwood deterioration in outside storage; lower wood handling cost to and from outside storage due to reduction in yard labor force and exclusive use of the most efficient handling equipment developed to date; and the increase in storage volume for a given footage of real estate area.

The South consumed 20,308,000 cords of pulpwood in 1957. The possibility of chipping all pulpwood at the mill site for outside storage would be a significant factor in lowering the cost of wood, the industry's largest single raw material cost.

Improve or Deteriorate?

At Port Townsend, Wash., Div. of Crown Zellerbach Corp., which has a 200,000-unit pile of chips which undoubtedly qualifies as the largest on the continent, J. M. Miller, asst. res. mgr., states: "We have not had degradation in the pile, but that is certainly not to say that we have not worried about such possibility. We periodically sample the older piles and have sample cooks made by the Central Research Dept. at Camas, Wash."

Concerning possible in-storage degrade, Dr. W. W. Moyer, director of CZ Central Research Dept., finds that "unless chips become moldy there is very little strength loss" but when shot through with mold there is material loss in strength. He says mold can become a factor when chips remain in storage during "longer periods of time."



TENDING 4-ACRE CHIP STORAGE of Western Kraft Corp., Albany, Ore.

FOOTNOTE

Unit of chips equals 200 cu. ft.
(1) 2400 lbs. wght.compacted (Douglas fir, ovendry)
(1) 2200-2300 lbs. wght.compacted (hemlock, ovendry)
(2) 3600-3800 lbs. wght.uncompacted green D. fir (40% MC)
(2) 4000 lbs wght.compacted green D. fir (40% MC)

(1)—Basis of chip purchase developed by pulp chip purchasers in Lower Columbia River area.
(2)—Lower Columbia River area.

Less Foam With Aged Chips

At Western Kraft Corp., which has operated entirely on lumber and veneer by-product chips since its start-up in July 1955, Felix M. Hammack, technical supervisor, pulp mill, says the capacity of outside storage at this plant is limited only by economics as far as area is concerned (4 acres at present) and by installed physical equipment for the maximum 60-ft. height.

"We feel convinced," Mr. Hammock continues, "that, when digested, aged chips from the pile exhibit less foaming tendencies on the washers and knotters. Pitch deposits on equipment in the pulp mill and in the machine room seem to be markedly reduced upon reverting to use of older chips from the pile rather than using fresh chips from rail cars.

"Percentage of the mill's total consumption produced from chips stored outdoors is a variable, depending on time of year and whether or not pitch and foam problems have been encountered. In the late fall, winter and early spring, most of the incoming chips short-circuit the outdoor storage and are conveyed directly from the car-unloading pit to one edge of the pile, thence to the digesters. Only those chips which are in excess of our demands are then distributed onto the pile.

"During the late spring, summer and early fall, when foam and pitch

PILES DENOTE LOCATIONS WHERE MILLS STORE CHIPS OUTSIDE in Washington and Oregon. Anenometers indicate weather stations to which cited climatological data pertain.

NORMAL TEMPERATURES

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	ANNUAL
Tatoosh Is., Wash.	*Record high 88*			*Record low 14*									
Normal day max.	44.9	46.5	48.3	51.5	54.8	57.7	59.2	59.5	58.7	55.5	50.6	47.1	52.9
Normal day min.	39.0	39.8	41.0	43.5	46.9	50.2	51.7	51.9	50.2	48.2	44.1	41.1	45.6
Monthly norm.	42.0	43.2	44.7	47.5	50.9	54.0	55.5	55.7	54.5	51.9	47.4	44.1	49.3
Seattle-Tacoma Airport	*Record high 96°*			*Record low 0°*									
Normal day max.	43.0	47.8	52.4	58.2	64.9	69.8	75.0	74.1	68.3	59.4	50.1	45.3	59.0
Normal day min.	31.4	34.0	36.6	40.0	45.2	50.0	52.8	53.0	49.1	43.9	37.7	34.3	42.3
Monthly norm	37.2	40.9	44.5	49.1	55.1	59.9	63.9	63.6	58.7	51.7	43.9	39.8	50.7
Olympia, Wash.	*Record high 103°*			*Record low −1°*									
Normal day max.	43.3	47.7	52.7	59.0	66.1	71.0	76.3	76.0	70.1	60.4	50.7	45.4	59.9
Normal day min.	30.6	32.3	34.6	37.7	42.0	46.8	49.2	49.7	46.0	41.6	36.2	33.4	40.0
Monthly norm	37.0	40.0	43.7	48.4	54.1	58.9	62.8	62.9	58.1	51.0	43.5	39.4	50.0
Astoria, Ore.	*Record high 93°*			*Record low 15°*									
Normal day max.	44.0	48.4	50.8	55.1	58.8	63.2	66.7	67.6	66.8	59.2	51.6	46.7	56.6
Normal day min.	36.1	37.8	39.8	44.2	48.2	52.0	54.8	55.9	53.8	49.0	42.6	38.6	46.1
Monthly norm	40.1	43.1	45.3	49.7	53.5	57.6	60.8	61.8	60.3	54.1	47.1	42.7	51.4
Salem, Ore.	*Record high 108°*			*Record low −10°*									
Normal day max.	44.8	50.4	56.0	62.3	69.6	76.2	83.2	82.3	76.4	64.6	52.8	47.0	63.8
Normal day min.	31.9	35.1	37.6	40.5	44.7	49.4	52.2	51.7	48.3	44.3	38.0	35.0	42.4
Monthly norm	38.4	42.8	46.8	51.4	57.2	62.8	67.7	67.0	62.4	54.5	45.4	41.0	53.1
Av. Annual & Monthly Precipitation													
Tatoosh Is.	10.57	8.40	7.69	4.85	3.13	2.80	1.80	1.85	3.93	8.20	10.43	11.78	75.43
Sea-Tac Arpt.	4.73	3.95	3.40	2.12	1.64	1.30	0.58	0.88	1.65	3.32	4.55	5.68	33.80
Olympia	6.69	6.16	4.50	2.34	1.66	1.28	0.72	0.66	1.80	4.50	6.77	8.66	45.74
Astoria	10.66	9.44	8.27	5.15	3.53	2.66	1.07	1.45	3.04	7.15	10.36	13.21	75.99
Salem	5.72	5.32	4.19	2.39	1.93	1.22	0.32	0.49	1.49	3.70	5.96	7.12	39.85
Av. 4:00 p.m. Relative Humidity													
Tatoosh Is.	83	81	80	80	82	84	87	90	87	85	84	84	84
Sea-Tac Arpt.	83	75	68	55	53	56	50	53	58	73	80	83	66
Olympia	80	73	62	51	49	52	47	50	54	69	79	84	63
Astoria	81	77	70	70	71	72	71	72	70	75	80	82	74
Salem	79	70	62	53	51	50	40	41	46	65	77	82	60

BASIC TEMPERATURE-MOISTURE DATA OF REPRESENTATIVE POINTS to facilitate interpreting reported chip storage results in relation to climatic conditions of other areas. (U.S. Weather Bureau data for 1957, all cited stations located westerly of Cascade Mountains.)

problems increase, due presumably to consumption of new-growth chips from our chip suppliers, it often becomes necessary to load our digesters from the older portions of the pile and distribute all incoming chips to other sections of the pile.

"In-storage degradation has not been noted thus far (although some chips now in the pile have been there three yrs.—ever since it was started). No rotting chips have been found, nor have any changes in pulp yield from our old chips been experienced.

"Rotation of our pile has not been, nor is it being, rigidly programmed. It has not been found necessary to date to rotate the pile to prevent loss of chip quality; instead, rotation has been because of foam and pitch. Half of the pile was rotated during the summer of 1957, the other half to be rotated during the summer of 1958."

Finds Chips Darken

Crown Z, Lebanon, Ore., division, which has 1-acre storage for chips from which unbleached sulfite and high yield sulfite for corrugating is produced, has experience dating back to May 1956. According to R. R. Morris, res. mgr., the only noted degradation has been chip darkening, after 12 to 18 months' storage, which affects the brightness of the resultant unbleached pulp.

A. Nelson Hartnagel, mgr., wood procurement and pulp production, Fibreboard PPC, Port Angeles, Wash., reports on their experience which dates back to July, 1956: Discoloration of the unbleached pulp—dropping several points in GE brightness has been noted. Excessive moisture such as rain or snow accelerates rate of degradation. This shows up towards the bottom of the pile.

First Mills to Store Outside

Among the early users of outside chip storage contacted by PULP & PAPER's survey were Fibreboard Paper Products, which inaugurated outside storage at its East Antioch, Calif., mill in 1949, and Crown Zellerbach's Camas, Wash., mill where outside storage began in 1950. Longview Fibre Co., Longview, Wash., and CZ, Port Townsend, Wash., both started chip piles in 1952. Port Townsend was built 32 years ago without a woodroom, on the basis of using chips from sawmills but these were stored inside for many years. The number of Western user mills and the volume of stored chips has increased quite rapidly.

The kraft process, making both bleached and unbleached pulp for market and in-mill paper production, is the principal chip consumption but some sulfite and semi-chemical production also utilizes chips from exterior storage.

The Biggest Chip "Mountains"

Of these user mills, Georgia-Pacific Paper Co.'s 130,000-unit outside storage capacity at Toledo, Ore., is second only to CZ's 200,000-unit storage at Port Townsend. The former has 7-acre sand-filled storage area, the latter's covers 38 acres. Except for Longview Fibre Co.'s blacktopped 12-acre storage for 90,000 units and Fibreboard's East Antioch 6-acre site, pile areas at most other user mills ranges from 1 to 4 acres.

Maximum pile height: Highs are Georgia-Pacific's 100-ft., Longfibre's 90-ft., Port Townsend's 80-ft. and Weyerhaeuser Timber Co. Everett kraft mill's 75-foot. One mill piles chips to only a 20-ft. maximum, but the normal range runs 30 to 65 ft. Year-around average height of pile in the individual mill storage areas runs 8 to 80 ft., the most common being 30 to 40 feet.

Percentage of Production

Percentage of mill production from stored chips ranges all the way from "emergency storage only" through "seasonally to 100%" to a complete 100%. Reports of 10 to 20% are more usual. G-P's Toledo, Ore., mill uses chips exclusively from storage, currently producing at rate of 105,000 tons of kraft pulp per year.

Length of Storage

For length of time chips stored in pile, CZ Port Townsend's four years for fir and cedar and two years for hemlock pretty well qualifies as tops. Except for Western Kraft's 2½-yr. storage, only two other mills (CZ Camas and Fibreboard) report storing for as long as two years. The plan at several mills is for maximum storage of 6 to 18 months. One mill aiming to limit storage time to but one month has an average in-storage time of two weeks. Average time in storage ranges to 9 mo. for the other mills.

Species Stored

Practically all Western commercial coniferous chips are represented—including Douglas fir (accounting for largest volume by far), hemlock, true firs, cedar, pine. Some sulfite mills restrict chip consumption and storage to hemlock, but at least one ammonia base sulfite mill uses both Douglas fir and hemlock.

"SLIDE UP TO THE TOP and level it off!"

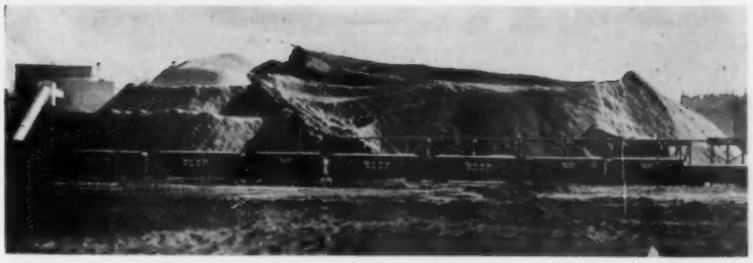
Surface Preparation

There appears to be a marked shortage of unanimity as to surface preparation of storage area and advantanges of same. Perhaps due to local conditions involved, what appears as the "solution" at one plant can be another mill's "problem." MacMillan & Bloedel Harmac Pulp Div. at Nanaimo, B. C., appears to have the ideal solution as far as storage area surface is concerned—"smooth rock" providing a "solid base adjacent to chips silos." Other mills are less fortunately situated.

A. Nelson Hartnagel, mgr., wood procurement and pulp production, Fibreboard PPC Port Angeles, Wash., says that they stack on blacktop because of the level surface which is for cleanup which does not contaminate chips with dirt.

Replies from mills concerning ground surface preparation for storage pile, advantage, and costs of outside vs. inside storage, are as follows:

CZ Port Townsend, "on the ground, most economical storage area; inside storage would be entirely too costly"; Longview Fibre, "blacktopped . . . faster handling, better cleanup, full recovery"; CZ Lebanon, "blacktop . . . cleaner, better chip moving, less waste"; Fibreboard Antioch, "sand troughs . . . giving compact efficient storage system"; Georgia-Pacific, "sand fill" (this



ENTIRE PRODUCTION of new Georgia-Pacific mill at Toledo, Ore. depends on chips from lumber and veneer leftovers. Two Rader Pneumatic high pressure lines feed chips to 130,000-unit outside storage, Link-Belt belt conveyor transporting from pile directly to digesters. Note rail cars arriving with chips and pneumatic line (just above cars) bringing chips across bay direct from sawmill and veneer plant.

plant depends entirely on outside storage);

Weyerhaeuser Springfield, "ground . . . $1.00/ton more for outside storage (vs. inside)"; Weyerhaeuser Everett, "blacktop necessary to keep sand out of system; capital investment 200 times more for inside storage—operating cost $1.50 per unit more for outside storage";

Western Kraft, "ground . . . inexpensive, no obstacle to expanding pile area"; CZ Camas, "blacktop discarded in favor of fine river sand fill . . . easier to screen out than blacktop which breaks and doesn't screen out," outside storage makes for "higher reclaiming cost, lower investment cost."

Chip "Turn Over"

Are chips in the pile turned over periodically? Two kraft mills in the big-league storage class flatly state "no." Practically all others say "yes," most of them implying or stating qualification of some sort.

These include: "Reduce (pile) to zero at least monthly"; "yes, at least once a year"; "about 50% each year via feeding to digesters"; "plan to do so annually by using pile"; "yes, every 18 to 24 mo. by turning complete section of pile"; "every 6 mo. by depleting pile"; "by first-in, first-out usage"; "every 2 yrs. with bulldozer"; "at least every 30 days by maintaining 2-4 weeks inventory and compartmentizing storage area."

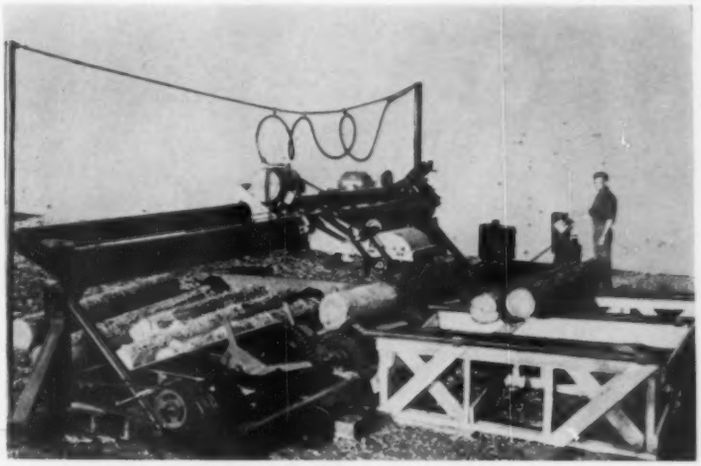
How Recovered from Pile?

Rubber-tired tractors with scoops (including at least one mammoth 25-ton LeTourneau log stacker equipped with a 5-unit bucket) and crawler tractors with standard or special-built bulldozers are looked on as important factors in recovering stored chips. In isolated cases machines of this type deliver all stored chips to mechanical or pneumatic conveyors. More common usage is as an auxiliary assisting gravity flow from the pile to the conveyor system.

The PULP & PAPER survey discloses about half of the mills transport pile-stored chips to pulp mill without further cleaning. Of the mills that do clean their chips en route from storage to digesters, straight screening is the usual method. At one mill (Fibreboard) the screened chips are further cleaned by a company-designed washer. The chips are immersed in water by a sloping screw conveyor and subsequently screen-dewatered.

At some mills stored chips are transported directly from the pile into digesters, thus entirely eliminating inside storage and collection. Both pneumatic and belt conveyor systems are used for this direct pile-to-digester transport.

One mill uses a Michigan Loader to push chips into the conveyor which feeds into a surge hopper above a pneumatic conveyor system.



Soderhamn Introduces Low Cost Barker and Chipper Team

Meeting the increasing demand for low installation, maintenance and operating cost of barking and chipping equipment, without sacrificing efficiency and performance, Soderhamn Machine Mfg. Co. announces its new DC-6 Log Barker (shown above) and a companion 48 in. Horizontal Chipper, designed especially for smaller mills.

Soderhamn claims that its DC-6 Barker will make a profitable investment for mills cutting as low as 7,000 bd. ft. (Doyle Scale) per 8-hr. day, and production up to 45,000 ft. per shift may be attained under optimum conditions. It will handle logs from 5 in. to 36 in. diameter, and from 6 ft. to 22 ft. long. Interchangeable heads—abrader, chain flail, and planer—enable meeting most rigid barking specifications. All operations are hydraulically controlled from a simple control station.

The 48 in. horizontal chipper eliminates necessity for elevated conveyor for infeed, since it is equally adaptable to a ground level mill. High chrome alloy knives bolt into the disc, and are easily reached for adjustment or replacement. Soderhamn's new, heavier anvil knife has four usable, hard-surfaced cutting edges, easily accessible for turning, thus reducing costly down-time. Chip size is altered by exchanging removable knife shims and resetting the chipper disc with a jack screw. The 48 in. chipper, equipped with six knives, produces an average of 30 cords per hour, feeding at 330 fpm, and propels chips sufficiently for direct loading onto truck or into loading hopper.

These two machines, together with Soderhamn's new CS-20 horizontal rotating chip screen form a complete woodwaste utilization installation which may be purchased for less than $20,000. Literature is available from Soderhamn's main office at Talladega, Ala., or from Room 409, Pittock Bldg., Portland, Ore.

HAULING WHOLE LOGS into St. Regis' Fargo, Fla., woodyard, truck is weighed on 100,000 lb. scale coming and going to determine amount of wood delivered as . . .

STARR UNLOADERS, in circle, are used to empty trucks as they arrive in yard. Logs are transferred to Starr decks and truck returns for reweighing at scales.

ONE OF TWO STARR DECKS, which provide eight hours run of logs, turn the inventory continually without rehandling and load the oldest logs into a flight conveyor which feeds the Nicholson debarker.

St. Regis Takes On Whole Trees

BY TOM BAKER
St. Regis Paper Co.

Fargo, Fla.

● St. Regis Paper Company has started what it believes is a new concept in chipping at its Fargo, Fla., woodlands headquarters: a chip mill which affords tree length harvesting of timber from its 210,000 acre Suwannee Forest.

The objectives: to reduce logging costs per cord; to permit delivery of the entire tree trunk from the forest and thereby reduce logging waste; to allow mechanization of the shrinking forest labor force for more production per man hour; to combine all harvesting operations into one—harvest poles, pilings, sawlogs and pulpwood in one cut thus avoiding damage to the residual stand and to eliminate the necessity of three crews working each stand in sequence.

Trees are felled and trimmed; the stems yarded with a crawler tractor and loaded onto a pole type trailer. The loaded trailer is pulled out of the woods and into the chip mill where it is weighed on a 10 by 50 ft. 100,000-lb. platform scale. The trucks are unloaded by either of the two Starr log unloaders and when empty return to the scale to be weighed out.

Whole Tree is Handled

Logs are debarked by a 30-in. Nicholson Rotobarker. A cut-off saw and log sorting system is interposed between the debarker and chipper. Here poles and sawlogs can be cut off and kicked out for sale, and oversized pulp logs can be cut off and diverted to a breakdown rig. The pulp grade logs, which are small enough to enter the 19¾ in. chipper spout, continue across this sorting system uninterrupted.

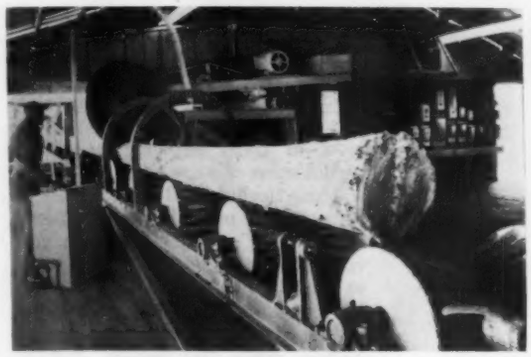
Stake is in Chips

The chipper, a Hansel 84 in. eight knife machine with horizontal combination feed spout and gravity discharge, is driven by an Electric Machinery 900 hp 450 rpm totally enclosed synchronous motor directly connected to the chipper.

Chips are collected below the chipper by a flight conveyor that discharges onto an inclined belt. The belt conveyor in turn discharges into a conveyor which straddles three railroad sidings. Chips are dumped from this flight conveyor into either of three waiting hopper cars without ever moving the cars. The sidings have capacity for 36 empty cars ahead of and 36 loaded cars behind the loading point. Loaded cars travel 75 miles along the Southern Railway to Jacksonville for switching into the St. Regis mill at Eastport.

Dust and bark is collected on a system of flight conveyors and discharged into a 60-ft. Reese burner.

The chip mill has been in regular operation since the middle of March and has been operated 16 hours a day since the middle of April. On the 16-hour basis, the mill is designed to process 75,000 cords of chips annually and is operated by two crews of eight men each.



CUT OFF SAW is between debarker and chipper, enables poles and sawlogs to be cut off and kicked out for sale while remainder of logs goes to chipper.

BREAKDOWN RIG USED to reduce overize logs too big for chipper spout consists of live log deck, small carriage, circle saw, roller bed and slab transfer that returns the material to the chipper, at far end of line.

Engineers See Logging

in Far West, also logging techniques, game and recreation facilities on CZ Tree Farm

● How one of the United States' largest and most spectacular privately owned and managed Tree Farms is operated was demonstrated on July 28 to nine busloads of pulp and paper industry engineers, associates and a goodly number of wives and children.

The party of several hundred guests motored from Portland, Ore., almost straight west to wind around the steep ridges and slopes of the Crown Zellerbach Clatsop Tree Farm of 185,000 acres. Several times they had thrilling views of the Pacific Ocean surf far below them.

This is the famed Pacific Coast "fog belt" (farther north they call it "the rain belt" but in this narrow coastal area some U.S. Forest Service neutral researchers say more fiber is grown in a given acre in a given time than anywhere else in the U.S.A. thanks to the prevalent dampness and mild weather). On this day there was a fog blanket over the shoreline but upon the Clatsop Tree Farm a broiling sun beat down with temperatures in the 90's. Because of fire risks, most logging was at a standstill, but the visitors were given demonstrations of high lead yarding, falling and bucking trees 150 ft. high, and a sensational tree topping exhibition.

Cameras Click for High Climber

The high climber, up 120 ft. high, lopped off the top 80 ft. of a 200 ft. high white fir, and dozens of cameras clicked over and over as the top crashed down and the sawyer swung back and forth on the rebound. Later the engineers were surprised to hear the men who fall and buck with Super D 55 McCulloch power saws generally make more money. About 40 of these saws are used on the Clatsop Farm, with 30 in. bar and chain for falling and bucking and 10 in. for trimming for loading.

Last stop on the tour was Astoria, Ore., where the Columbia meets the ocean, at the northern tip of the CZ forest. Crown first purchased land on the Tree Farm in 1893 and now it covers 200 sq. mi. Old growth, new growth of various age spans, 10 to 80 yrs., and reforested cutover lands are kept in balance, with Western hemlock predominant. Sitka spruce, Douglas fir, cedar and alder are cut, some of these for lumber and plywood.

The much publicized Tillamook Burn, a 40 by 30 mi. area ravaged by fire in 1939 and by other fires in 1939 and the early 40's, was passed on the way to the CZ forests, and to the surprise of many who had seen the black hills in past years, it is all green again. More timber has been logged from the burn than early conservative cruises estimated was there before the big fire. There are fertilizing effects from ash for several years, guides said.

Cutting and Seeding Practices

Hemlock, the pulp species, is cut in 60 years. Pre-logging removes "under story" or small trees under large ones. Re-logging is also done. Thinning may prove to prolong a high growth rate, as is expected, but CZ foresters will not know how successful this practice is for another 30 or 35 years. The travelers saw strip logging and block logging patches, where areas are clear cut. This assists in fire control and the areas are naturally reseeded by surrounding trees. The winged seed of hemlock will travel great distances.

Some seed is planted by CZ from single wing planes or helicopters. There are 100,000 hemlock seed to one pound, after the seed wings are taken off. Ground on the Clatsop Farm is too steep and rough for planters, so the only other planting is by hand. These are two-year-old trees.

About 80% to 90% of Clatsop Tree Farm is reseeded naturally. Man does the planting only where natural reseedings have proved a failure or where the brush is exceptionally heavy.

TREE-TOPPING demonstration was one of several attractions for visitors on 200-mi. woods trip through Crown Z's Clatsop Tree Farm.

Bear Stories—Elk, Deer, Too

The visiting engineers were regaled with conflicting reports of the bear stories. Foresters admit the facts are not too well known, but one theory is that bears discovered only in the last 30 or 40 years they liked to eat the cambium layer of trees and have been killing many trees since then. Other theories are the trees became more accessible to bears only recently, or that the loggers only discovered the bears' tastes in recent years. It is true that some bears like hemlock, others like firs, etc., as it was noted that they passed up the species they didn't relish.

Treated seed, both repellants and poison, are being used in Clatsop to hold down the destructive white footed mice, who eat seed in great quantities.

Incidentally, one of the largest elk herds in the west roams the Clatsop Farm. Last year more than 2,000 hunters bagged 179 elk, 410 deer,

HOSTS ON WOODS TOUR: George Schroeder (left), chief forester of Crown Zellerbach Corp., and Howard Peterson (right), supt. of Clatsop Tree Farm.

90 bear, 10 bobcats and 25 coyote. Fishing is excellent. Several picnic and camping areas are reserved by Crown Z and kept in order for the public, with tables, parking, and other facilities.

In 1943, hemlock loopers threatened thousands of acres of prime forest on the Tree Farm. Airplanes made 900 flights to drop insecticides. High speed salvage logging took out 200 million bd. ft. infested by the insects. The threat was greatly lessened.

Logging Equipment Used

For high lead yarding, the engineers saw a Washington Iron Works yarder with North Bend system high leading out a deep canyon. The North Bend system is a skyline with fall block and carriage. This will reach greater distances than a tower and is designed to yard large sized logs.

Loading is done with air tongs manufactured by Berger Engineering of Seattle and designed by Lou Reese, a Crown Z logging mgr. The tong is mounted on a dipper stick of a 1½-yd. Lima shovel. It is a speedy operation for smaller logs and contributes to more complete utilization. The shovel operator can manipulate the tong from inside the machine, which is a safety factor as there is no need for a man to get under the log.

Also witnessed was a D-8 Caterpillar tractor with Hyster arch swiftly snaking in a cat turn on white fir logs of 30 in. average diameter—with 4,000 to 5,000 ft. of logs per load. The Clatsop Farm uses all Caterpillar D-8's for logging and Caterpillar D-9's for road building.

There are many independent contractors working on the Tree Farm, too, and their operations vary greatly and they prefer in some cases International Harvester tractors, in others, Allis-Chalmers, and down to the 440 John Deere.

Where Logs are Strapped and Floated

The tour continued to the Lewis and Clark boom, named for the explorers sent through this country to the ocean by President Jefferson in 1804-5, to appraise the Louisiana Purchase. At this boom logs come in on trucks and are weighed on Fairbanks-Morse scales before being strapped with Acme steel bands for towing to the Crown Z paper mills in the area. A "package" of about 7,500 bd. ft. of logs weighs about 85,000 lbs. They are strapped right on the trailer and are dumped directly into the water. In a normal day, 110 loads are handled here. Strapping makes for lower rafting, storage and towing costs, the operators said.

Mostly Kenworth trucks and trailers with Cummings diesel drives are used. Also, there are some Autocars and a few Whites. The contractors come in often with International trucks.

Other Features of Clatsop Tree Farm

There is a safety man in each CZ camp. Closer attention to safety problems is reported to have cut lost time accidents in the CZ woods by one-third to nearly one-half. Regular classes for first aid are held.

Fire equipment includes three pumps mounted on pickup slide on units, three dismountable fog machines, 10 tankers of 750 to 2,000 gal. capacity, 110 back pump cans, two 1,200 gal. towed trucks, three 1,500 gal. lift on tanks to fit on log trucks, three canvas liners used to convert rock hauling trucks to 750 gal. tankers, numerous hand pumps, caches of tools in the woods, and heavy equipment such as bulldozers. Fire schools are regularly held and farmers are given training.

Clatsop Farm has 311 miles of rock roads, 176 miles of dirt roads and 38 bridges. Rock roads are built at cost of $12,000 per mile.

Clarence Richen, who heads Crown Z logging and forestry operations, directed arrangements for the tour. Actually in the field as hosts to the engineers from the Portland convention were George Schroeder, chief forester of CZ, Herb Willison, assistant chief forester, Howard Peterson, supt. of the Clatsop Tree Farm, and other key men of the forestry and logging staffs.

Age Classes Distribution on Clatsop Tree Farm

	No. of acres
Old-Growth Stands	32,548 acres
Second-Growth Stands	
80 years	7,667 acres
70 "	7,544 "
60 "	11,008 "
50 "	5,445 "
40 "	5,088 "
30 "	14,350 "
20 "	28,821 "
10 "	24,608 "
Total second growth	104,531 acres

Circle Bridge Plantations—Clatsop Tree Farm

This is part of some 2,000 acres planted between 1926 and 1929, mostly to Sitka spruce on a 6 x 6 ft spacing. Hemlock and some Douglas fir seeded in gradually after the planting. Permanent growth plots in a similar 25-year-old plantation (3 years younger than this one) show the following statistics:

Species	*No. Trees Per Acre*	*Ave. DBH"*	*Tree Ht.'*	*Bas. Area Per Acre Sq. Ft.*	*Volume Tot. Cu. Ft.*	*Volume Cords*	*Periodic Annual Increment Tot. Cu. Ft.*	*Periodic Annual Increment Cords*
Hemlock	420	3.9	35	34.9	693	1.9	71.1	0.3
Spruce	426	7.5	38	131.3	2,440	20.1	241.4	2.2
Douglas-fir	16	8.6	53	6.5	185	2.2	17.8	0.3
P.O. Cedar	16	7.7	33	5.2	78	0.6	6.8	0.1
Entire Stand	878	6.1		177.9	3,396	24.8	337.1	2.9

COMING TO THE NORTHEAST? Some Southern mills have been buying pulpwood by weight for years (above). Now the North looks at . . .

Pro and Con of Buying By Weight

Southern mill men tell Northeasterners of their experience and why they like weight scaling of wood—also the pitfalls

• "Purchasing pulpwood by weight is another way of saying that the buyer pays for what he gets and the seller gets paid for exactly what he delivers," explained C. R. Chamberlain of West Virginia Pulp and Paper Co.'s. Covington, Va., mill. He was speaking at a recent meeting of the Northeastern Technical Committee of the American Pulpwood Assn.

This system is not new to the South. Several mills have been doing it for years (See Weight Scaling, P&P, June, 1954). But now the Northeast is keenly interested and four mills, at least, are reportedly on the verge.

Why Westvaco Likes It . . .

By C. R. CHAMBERLAIN

West Virginia Pulp and Paper Co.

West Virginia was having considerable trouble with our measurements and inspection and a research program involving the weighing of over 50,000 truckloads of wood confirmed our worst fears. Our per-cord weights for truck-delivered wood varied terrifically, reflecting personal problems, errors in human judgment, variations caused by size, age, straightness, length, different species and method of ranking wood.

We found the factors involved, combined with normal human characteristics, made it impossible to arrive at a consistent average weight per cord, when we bought wood on a volume basis.

We believed the only permanent solution was to buy on a weight basis and after giving our suppliers a 60-day notice, established cwt. prices for wood delivered by truck.

At our Covington mill we like to use freshly prepared green wood, as our chemists report that they obtain a better yield and stronger fibers from this wood. We wanted to get what we paid for and we were willing to reward the supplier who delivered to us good sized, well prepared, freshly cut wood of the better yielding species. And we believed were justified in paying less to the supplier who brought in small, poorly prepared, short, crooked, or old wood, or low density poor yielding wood.

The 25% or 30% who brought in well prepared, better yielding woods, received more on a weight than a volume basis. It did not take the remaining suppliers long to realize that it paid off when they brought in a heavy load of wood. And a heavy load of wood meant freshly cut, good sized wood. Travel time was no greater for a heavy load of good wood than for a light load of trashy wood. We provide free mechanical unloading at the mill so that no extra labor was involved. They did have to load heavier sticks but in many cases end loaders or tossers, pallets or mast and boom type loaders were used.

They discovered that loose ranking, cutting short wood, loading hollow, crooked or small sticks no longer paid. Just the opposite. The inferior wood took up space on the truck and took a lot of their time for which returns were considerably less. Shortly after starting to buy wood on a weight basis, our average weights per cord increased substantially and we are confident this indicates that we are receiving more pounds of fiber for our money.

Solved Bookkeeping Problems

We found to our surprise and delight that these fellows worked out satisfactory arrangements very quickly. Many asked what did 16,000 lbs. for

instance, mean in cords. Our tests indicated that well prepared, green, specification wood averaged approximately 5,400 lbs. for hardwood and approximately 5,300 lbs. for pine woods. We explained how these average weights might vary due to species involved, size of the wood and age and told them that it was up to them, taking these factors into consideration to agree with the seller as to how many pounds would represent a cord of wood. Then they merely had to divide the number of pounds per cord into total number of pounds delivered to determine the number of cords delivered.

Incidentally, tests had brought out that when wood is delivered to us very quickly after cutting, the average weight per cord is not greatly affected by the season.

Another method our suppliers use, is to divide the returns they receive for their wood on a percentage basis. The stumpage owner receives a percentage of the total return, the cutter, and the hauler. The adjustment was made quickly and with much less complaint and trouble than we had expected.

One benefit to the supplier was that we were not as particular about having wood cut to an exact measurement. Also, we were able to weigh his wood, unload it, reweigh his truck and give him automatically printed figures showing the number of pounds he delivered in much less time than on a volume basis.

The supplier had the satisfaction of seeing his wood weighed and knowing that an accurate weight is printed on his ticket. He does not have to argue with inspectors as to the average length of the wood, the number of small sticks, the volume represented by void spaces. We no longer have arguments and dissatisfaction that was caused on both sides when human judgment was the deciding factor and we have been able to effect a reduction from 48 to 12-man days per week by use of scales instead of inspectors and scalers.

Our experience has been so satisfactory that when we discontinued our dealer system of buying pulpwood and decided to buy our rail wood at 11 company-owned mechanized yards in the Piedmont section of Virginia, we installed scales in all of these yards and established prices on a cwt basis. The yards are in highly competitive areas where all our competitors were buying on a per-cord basis. We found that suppliers compared the returns on a weight basis, with what they had been receiving on a per-cord basis. They decided our system was fair and learned that it paid to bring in a heavy load of good wood.

Mechanics of the System

We used Toledo scales at the mill and Fairbanks-Morse at our railroad concentration yards. The scales have dual faces that may be read by the trucker outside the scale house as well as by our man inside the scale house. The printing mechanism automatically records the weight within 20 lb. variations on scale tickets that are attached to a voucher that provides information as to gross weight, net weight, price and the net return for the wood.

Trucks and wood are weighed when they drive on to the 50-ft. platform scales and then they are reweighed after the wood is unloaded. The process is so simple and quick that the trucker is handed a voucher or a check as he leaves the yard. These scales probably cost in the neighborhood of $4,000 and installation about a like amount.

The Mead Approach

By GEORGE MULLER

The Mead Corp., Kingsport, Tenn.

We list 20 species of Appalachian hardwoods which are acceptable at our plant. With the emphasis being placed on our truck wood program, we thought it necessary to increase the speed with which trucks were scaled.

Buying by weight was the logical answer. Prior to weight scaling it required 7 to 10 minutes to scale each truck. By installing scales we reduced scaling time to approximately one minute, but from a practical standpoint we can process 30 trucks per hour which is about the maximum capacity of two unloading cranes.

In addition to greater speed, we have an increase in the scaling accuracy. We had previously made periodic photo analysis of our truck wood which proved to us mathematically what we had observed visually; that there was a considerable and measurable variation in the quality of wood preparation. Now that we are buying by weight, we pay a premium for well prepared wood, and conversely, impose a penalty for poorly prepared wood.

Installation of Scale

We installed a Fairbanks-Morse 45-ft. by 10-ft. concrete platform scale costing $4,824 plus installation cost of $5,200. It is a 50-ton scale with a printomatic recording to the nearest 20 lbs. The scale head and scaling office should be as close as possible to the platform.

One possible additional refinement would be electronic equipment to compute payment. Such a system has been developed by the Toledo scale people involving a digital scanner and translator. By adding an automatic electric typewriter, a completely electronic unit can be used to write a check for each load. This would be the ultimate in weighing equipment and its feasibility would depend upon the number of trucks. To date we have handled a maximum of 250 trucks per 11-hour day.

Data Collection

At Kingsport we measured and weighed each load for 24 weeks. This amounted to more than 8,000 truckloads and gave us a 95% reliability of ± 26 lbs. At Chillicothe where the first weight data were developed, we measured over 17,500 truckloads over a period of 44 weeks, to check seasonable variations. We proved that changing seasons had very little effect on average weight per unit. At our Harriman, Tenn., mill we checked about 2,500 loads of oak for more than 8 weeks and came up with a very consistent average weight with a 95% reliability of a ± 15 lbs.

To secure reliable data, only freshly cut wood should be included. Wood that has been cut over two weeks naturally has a moisture loss and should not be used for a statistical average.

Interesting was the wide variation in the average weight of various species, from a minimum of 4,500 lbs. for fire cherry to 8,000 lbs. maximum for oak. Oak varied from 5,600 lbs. to 8,000 lbs. with an average of about 7,077 lbs. We believe these are due to differences in preparation, growth rate (site quality) and locality.

Pulpwood Weight Sampling

By J. D. BATES

Brown Co., Berlin, N.H.

Due to our particular mill requirements we do not as yet have as much interest in weight scaling as others. Our sulfite mill requires hardwood which has been seasoned. To save rehandling costs we season as much wood as possible in the woods, with considerable loss of weight prior to truck delivery to our mills.

We set up a project in Feb. 1957 to start collecting weight information about our hardwood pulpwood. Some 200 loads were weighed and analyzed. Actual weights per scaled cord ranged from a low of 4,460 lbs. to a high of

6,360 lbs. or a difference of 43%. Average load was 5,560 lbs.

We thought one of the most important variables would be solid cubic content. Obviously a cord of small diameter wood could be expected to weigh less than a cord of large diameter wood, simply because there are more solid cubic feet in the cord of large wood.

All loads which were weighed were photographed and solid cubic content of wood and bark was determined by the dot-count system. The solid cubic content per cord ranged from 95.8 cu. ft. for large diameter wood to 88.4 cu. ft. for small diameter wood. When weight per cord was reduced to weight per solid cubic foot, there was no difference between large diameter and small diameter wood.

Probably the greatest variable was age. We tried to classify each load in one of four classes: very green, green, dry and old wood. As expected weights on a per cord basis were quite variable, but weights on a solid cubic foot basis showed a definite direct relationship between conditions and weight per solid cubic foot. Using lbs. per solid cubic foot of very green wood as 100%, green wood was 97%, dry wood 87% and old wood 85%.

More on Weight Sampling

By E. L. GIDDINGS

Penobscot Chemical Fibre Co.

We weighed 72 truckloads of rough hardwood during June and July, 1957. Average weight was 5,050 lbs. per cord for about 300 cords. The oldest wood (cut 9 months) weighed 4,860 lbs. per cord, the newest (less than 2 weeks), weighed 5,270 lbs. per cord.

The smallest wood had 138 sticks per cord and weighed 4,670 lbs. per cord. The seven largest loads (40 to 55 sticks per cord) weighed 5,210 lbs. per cord. Average load was 70 sticks per cord. Moisture content averaged 36.47% on 21 loads, varying from 33.6% to 41.2%. This was relatively new wood, the oldest being 4 months old. The highest moisture content (41.2%) was in a load of freshly cut elm.

Questions and Answers . . .

Q. It is necessary to set up standards for large, small and various species of wood?

A. No. Don't overemphasize these finer variations.

Q. Is there a direct correlation between density and yield?

A. Yes, a straight line graphic relationship. Remember that weight buying presumes that green wood is best.

Q. At Kingsport was increased average wood weight offset by increase yield?

A. To date the data is not yet complete enough to prove this point. However, it appears this might well be the case.

Q. Is there a different price or different weights for different species at Covington?

A. Absolutely not, we want the heavy wood for better yield.

Q. How do you account for wood as it is taken from storage?

A. We reconcile our inventory consumption as each pile is cleared from the Kingsport yard.

Q. How is this accomplished at Covington?

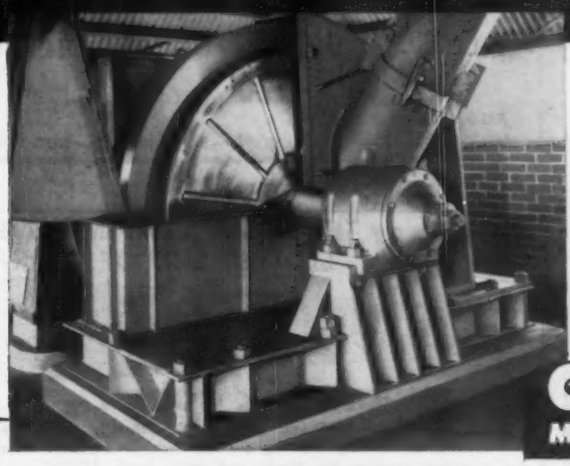
A. Wood is charged out on a poundage basis by means of a weightometer which weighs our chips as they are conveyed by belt. It is very accurate and checks within considerably less than 1%.

Q. How much bookkeeping can be done mechanically?

A. It can all be done, including the writing of the check, if you care to invest that much money in this type of equipment.

Uniform, Clean-Cut CHIPS

MINIMUM { Fines / Bruising / Maintenance



CARTHAGE NORMAN CHIPPER is famous for the unique variable angle of grind of the knives and helicoidal disc segments which pull the log in at exactly the correct rate for clean, sharp chipping at all points along the cutting edge.

Consequently, at least 70% of the chips are of the specified length. There is practically no bruising and no sawdust, resulting in greater yield of higher-strength pulp. Rugged construction results in exceptionally low maintenance costs. Write for Bulletin CNC-2.

Chipper with top of hood removed showing helicoidal disc segments and knives with variable bevels.

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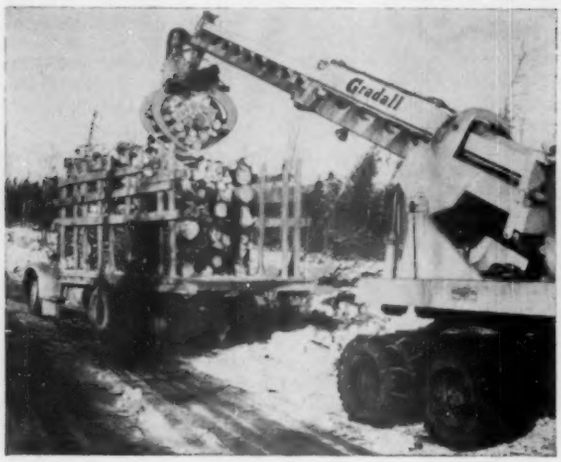
In hot or cold wood handling...



GRADALL LOADS 19 TRUCKS DAILY

For R. H. Currier, Gorham, New Hampshire contractor, a single Gradall with exclusive positive control grapple loads more wood with less manpower and does the job faster.

Although often required to move from one yard to another, the Gradall loads 19 trucks with 7 to 7½ cords a load—*133 to 142 cords a day* of either frozen or unfrozen wood. And, no labor is required on the ground to guide the grapple or to gather the wood into full-load bunches. Loads are spotted more accurately, there are fewer lost "bunches" and trucks are completely filled.

Find out for yourself how the self-propelled Gradall with simple, foolproof arm action can reduce your pulpwood handling costs. Arrange for a demonstration with the Gradall Distributor in your area.

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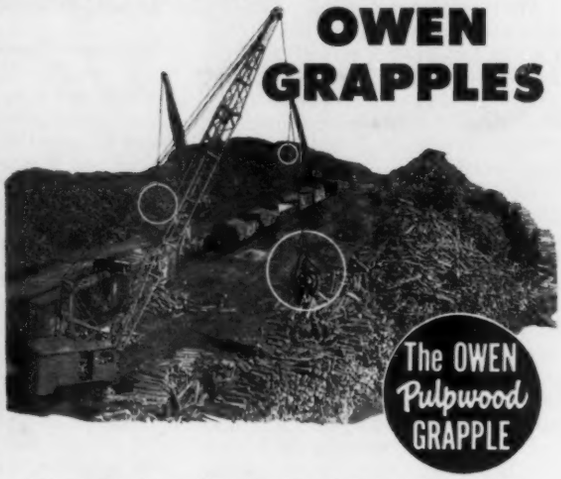
one-two-then three...

OWEN GRAPPLES



Exceptional performance of Owen Pulpwood Grapples sells unit after unit as in this case.

To try one is to instantly recognize superior handling efficiency based on an original and exclusive principle of operation.

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Hi-Production
CHIPPER KNIVES

- *Produce more uniform chips*
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THE WAPAKONETA MACHINE CO.
Since 1891
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ALSO MANUFACTURERS OF:
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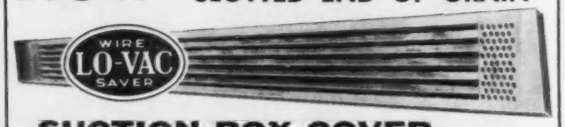
NOW THERE IS A NEW, IMPROVED SLOTTED END OF GRAIN

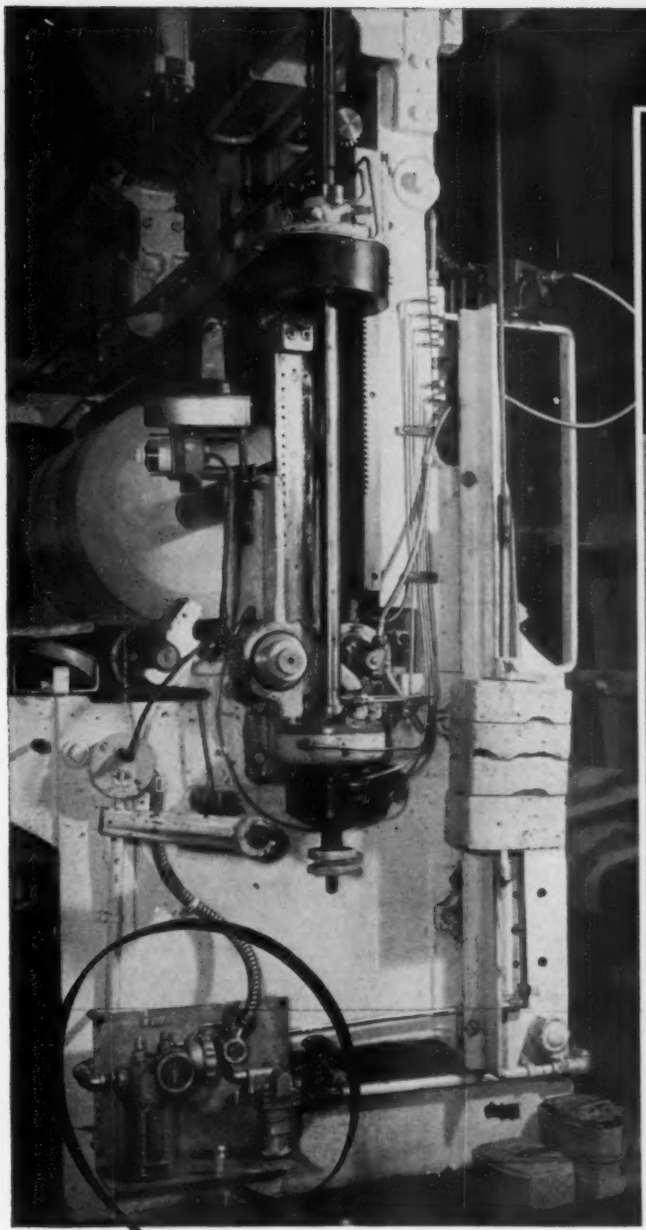


SUCTION BOX COVER

The characteristics of end grain Maple naturally provide a smooth, even, long wearing surface. Laminated plastic cross members support the Maple end grain lands. LOVAC construction eliminates sag. Check these features: Eliminates streaking, less pinholes, lessens clogging, gives longer wire life, even vacuum, better fibre formation and better tensile strength.

Write for nearest representative, data sheet and literature.

APPLETON WOOD PRODUCTS CO. APPLETON · WISCONSIN



One Alemite Oil-Mist unit serves 15 lubrication points on this high-speed slitter and rewinder. Oil can and grease gun methods have been replaced with continuous automatic Alemite Oil-Mist!

WAX PAPER MILL REPORTS:

4 times longer gear life...

at half the lubrication cost

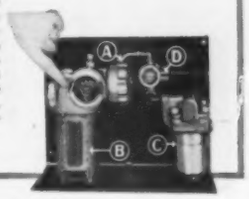
with ALEMITE OIL-MIST *Automatic Lubrication!*

You don't see any more old-fashioned oil cans and drip oilers in this leading wax paper plant. For more than a year, modern Alemite Oil-Mist lubrication has been on the job. The plant superintendent reports these 6 major Alemite advantages:

1. Lubrication costs have been cut in half!
2. Gear life is *4 times longer*. Less downtime, greater output!
3. All gears, anti-friction bearings and chains always receive clean, accurate, *foolproof* lubrication!
4. Product spoilage due to over-lubrication has been eliminated!
5. No more greasy, oily floors to create fire and safety hazards!
6. Lubrication man-hours have been reduced to only *five minutes a day!* (Time required to fill Alemite Oil-Mist reservoirs.)

Alemite Oil-Mist is used to lubricate four slitters with rewinders, and three waxers at the paper plant. Find out how this efficient system can save money and increase output in *your* operation. Send for details today!

How it works. Alemite Oil-Mist is a completely enclosed system which atomizes oil into minute particles, distributes it through tubing to bearings, where it forms a uniform coating film. Suitable for bearings designed for either oil or grease. No moving parts. A. Air Regulator. B. Oil-Mist Lubricator. C. Water Separator. D. Solenoid Control.



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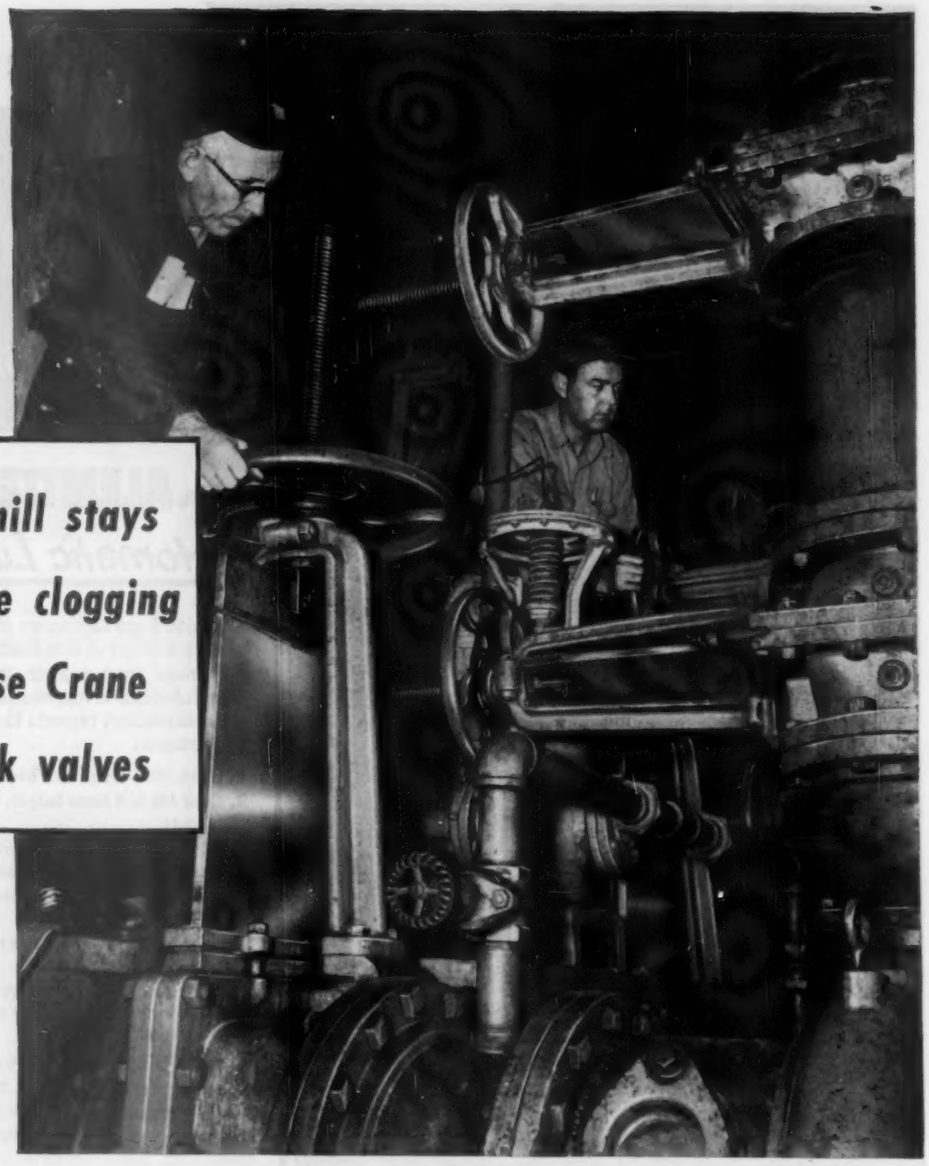


Another mill stays free of line clogging with these Crane pulp stock valves

This scene is in a leading Southern kraft mill. The valves—10- and 18-inch Crane pulp stock valves—are on lines from brown chest to screens.

These valves were installed 15 years ago and have been operated approximately once a week since then. More important, they demonstrated to the mill management that clogging of stock lines due to valve leakage and entrapment of fibers can be avoided completely.

So well have these Crane valves performed that the mill standardized on them several years ago. As a result, it has since had no problems with valve leakage or stock line clogging.

The unmatched efficiency of Crane pulp stock valves is in their highly developed "combing" and shearing-action seating design. There's no jamming of fibers under the disc; the Crane knife-edge cuts through them to seat tightly. Crane no-bonnet design leaves no place for pulp impaction in the valve body.

Ask for Circular AD-2156

This circular will show you quickly why Crane valves work where others fail. It also gives specifications on the full Crane line, including the all-new stainless steel, short face-to-face pattern. Ask your Crane Representative for a copy or write to address below.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill.—Branches and Wholesalers in All Areas

Strictly Personal

Southern
Memo from WFD

The Southern Exposure: Olin Mathieson's packaging div. recently underwent a major overall change. ROBERT H. EVANS, formerly vice pres. and gen. mgr. of the forest products div., now heads the entire packaging div. as v.p. Working directly under him are three corporate vice presidents, M. H. (BUD) COLLETT, new mgr. of forest products, M. L. HERZOG, mgr. of film operations and PHILLIP C. BROWNELL, who will head Ecusta Paper div. T. R. (TEDDY) MOORE, formerly in charge of kraft paper operations, becomes div. v.p. for paper operations of the forest products div. and WALKER HAMILTON, onetime pres. of Riegel Paper Corp., is div. v.p. and mgr. of converting operations for forest products. W. H. BROWN continues as v.p. in charge of lumber operations. BRUCE BROOKS is product mgr. of kraft pulp and paper; KENT ANDERSON, product mgr. of containers; R. J. CONTEL, product mgr. of cartons and J. R. PEAT, product mgr. of bags. . . .

FRED A. RITTER, who joined Gulf States Paper Corp. last year after scoring an outstanding record as gen. sales mgr. of Capital Paper Co. in Indiana, has been named vice pres. for sales of Gulf States. . . . Engineered Instrument Sales Co., 2717 Union Ave. ext., Memphis 12, Tenn., is now representative for Hills-McCanna Co. of Chicago, makers of diaphragm valves, pumps and light alloy castings.

EARL GAUDET, supervisor for Standard Paper Co., Richmond, Va., is passing out cigars again. He and wife Mary are the proud parents of a new son, GREGORY MARK, who weighed in at seven-and-a-half pounds. . . . A. J. NAVARRE, formerly gen. plant super. of Orange Pulp & Paper Mills, Inc., and J. H. AINSWORTH, onetime technician with Thilmany Pulp & Paper Co., Kaukauna, Wis., are now vice presidents and members of the board of the new Noralyn Paper Mills, Inc., 316 Triad Bldg., Baton Rouge, La. Mr. Navarre's new home address is 685 Leeward St., Baton Rouge. . . .

C. H. HUDSON, dist. application engineer for General Electric in Atlanta, has been elected chairman of the Pulp & Paper Industry Subcommittee of the American Institute of Electrical Engineers for the next two years. E. K. MURPHY, asst. mgr. of Rayonier's Jesup, Ga., mill, is vice-chairman, and E. L. ELETSON, Alton Boxboard Co., Alton, Ill., is secretary. . . . RALPH STREETY, power and steam supt. of Bowaters Southern Corp., recently was named a winner in Bolton's annual contest. . . .

Dictionary of Pulp and Papermaking Terms
By Curtis L. Brown

Acid number—The gal who gave you the cold shoulder
Baling—Deposit to avoid jailing
Converter—Missionary
Dandy roll—Delicious pastry
Electromotive series—It'll never replace the World Series
Operations research—Surgeon looking for lost sponge
Piping—Chinese metropolis
Vat—Animal doctor

Atlanta Chemical Sales Club has elected HARRY V. ACKERMAN, DuPont dist. sales mgr., pres. for the next year. LEROY STEWART, dist. sales mgr. of Dow Chemical Co. is vice-pres.; ROBERT W. WURST, dist. sales mgr. of Pennsalt Chemicals is secretary and JAMES MURRAY, asst. sales mgr. of Tennessee Corp., is treas. . . . G. M. Wallace and Co., Denver, Colo., representing Cochrane Corp. for water treating and steam specialty equipment, has opened a new district office in El Paso, Texas (Suite 512, Electrical Bldg.) under direction of professional engineer B. M. HUFFMAN. . . .

JAMES L. GOOD, DONALD W. MEMORY and RICHARD J. KREMER have joined West Virginia Pulp and Paper's bleached board div. at Covington, Va. Messrs. Good and Memory are both veterans of the company's research lab and Mr. Kremer comes from the tech. service staf . . . also new at Covington are JAMES R. BALLENGEE, VPI graduate, WAYNE S. BARLOW, from New York State U., and WILLIAM T. HEYSE, who received a master's degree from North Carolina State. . . .

DONALD E. LAWSON is now asst. mgr. for engineering and maintenance at Rayonier's Jesup, Ga., mill. EARL K. MURPHY, who formerly held the title has moved up to chief engineer for Southeast Central Engineering div. and FRANK C. HAWKS, JR., has been appointed asst. res. mgr. of the Fernandina, Fla., div.

WILBUR L. ORR, has been promoted to mfg. supt. of pulp and paper mills at St. Regis' Pensacola, Fla., mill. His former position as pulp supt. is now held by RICHARD G. COHN. . . . R. W. (BOB) RILEY, paper mill supt. of Crown Zellerbach's West Linn div., is asst. res. mgr. of the St. Francisville Paper Co. Mr. Riley has been a key man in coated paper development since he began work with Crown in 1945 . . . new promotions at CZ's Gaylord div. in Bogalusa, La., include E. J. WHELAN, to supt. of chemical products; W. R. KING to asst. supt. of chemical products; LEO N. LYNCH to supervisor of Bogalusa's laminating dept. and WALES H. NEWBY, to Bogalusa laboratory supervisor. VERTREES YOUNG of Bogalusa was elected a director of CZ replacing JOSEPH M. ARNDT, retired. Mr. Young is vice pres. of CZ and gen. mgr. of the Gaylord Container div. . . .

Protective Coatings School at Houston

Protective coatings will be the theme of a two day coating school, Sept. 6 and 13, to be conducted by the Coating Society of Houston, Tex., at Hanna Construction Co., Houston. The chairman of the school is O. A. Melvin of Carboline Co.
Above (l to r): H. M. Edwards, Petro-Tex Chemical Co., treasurer of the society; F. Parker Helms, Carbide & Carbon Co., vice president; R. H. Bacon, Dow Chemical Co., president; M. W. Belue, Champion Paper & Fibre Co., secretary, and Mr. Melvin, Carboline Co., chairman of Education Committee.
Object is to coordinate knowledge of proper coating techniques between applicators, suppliers, users and management. Instruct all persons interested in the proper techniques of surface preparation and application of protective coatings. Anyone interested may attend. For further information, or to make reservations, contact O. A. Melvin, Carboline Co., P.O. Box 14284, Houston, Tex., telephone OLive 4-9514.

PULP & PAPER Strictly Personal

Saddening to hear of the death of W. S. RICHARDSON, Gaylord by-products supervisor, who died at 51. He had been with Gaylord since 1932.

Key men at Marathon Southern Corp.'s new mill at Naheola, Ala., are: JOHN SPALDING, mill mgr., formerly papermaking supt. at Menasha for the entire Marathon div.; J. VINCE MARTIN, woodlands mgr., comes from Wausau, Wis., where he worked in the firm's Lake States woodlands operation; GEORGE BRABENDER, asst. mill mgr., formerly staff asst. to exec. vice pres. at Menasha; JAMES R. KOCHA, plant engineer, was plant engineer at Menominee, Mich.; JOHN E. JUNGKIND, public relation representative, formerly public relations representative for the National Cotton Council in Washington, D.C.; ROBERT S. WILLIAMS, paper mill supt., held the same job at Marathon's Canal St. plant in Menasha; DONALD HESSELMAN, production services supervisor, held the same job at a Marathon converting plant in Neenah, Wis.; WILLIAM E. LLOYD, industrial relations admin., formerly headed up industrial relations from Marathon's Oswego, N.Y., plant; GEORGE SMITS, converting supt., held the same job with Marathon's northern div in Green Bay, Wis.; RUDOLPH C. RICHTER, tech. services supervisor, formerly head of the pulp and paper dept. of the U. of Alabama School of Chemistry; HANSELL R. WADE, pulp mill supt., was supt. for the Brunswick Pulp & Paper Co., Brunswick, Ga.; DAVID L. HUGHES, purchasing agent, comes from central purchasing staff in Menasha; JOSEPH P. (PAT) SMITH, office mgr., comes from central industrial accounting div. in Menasha; JAMES CLYDE GRACE, area supervisor—woodlands, formerly helped supply International Paper Co. with pulpwood

Spalding . . . . Martin . . . . Brabender

Will Head Marathon's Naheola Mill

Mill mgr. at Marathon Southern Corp., Naheola, Ala., is John Spalding, former papermaking supt. for the entire Marathon div. of American Can Co. in Menasha, Wis. He joined Marathon in 1947, coming from the American Viscose Corp. J. Vince Martin, woodlands mgr., comes from Wausau, Wis., where he worked in the company's Lake States woodlands operation. George Brabender, asst. mill mgr., was staff asst. to the exec. vice pres. of Marathon in Menasha.

Clark ..... Smith ..... Keys

Rader Forms Southern Firm

Rader Pneumatics Inc. of Tennessee has been formed to aid growing use of high-pressure air conveying for materials handling in the South, with headquarters in Memphis, according to Joe Keys, president of both the new firm and Rader Pneumatics Inc., Portland, Ore. John H. Clark, formerly of Wilco Machine and Mathieson Chemical, is vice pres.-mgr. of the new RP organization. W. C. Smith, pres. of RP Engineering Co. Ltd., Vancouver, B.C., was caught in middle of Rader executives huddle at recent Engineering Conference.

Jam it-Free it!

turn of an air valve frees log jams

MURCO "V" TYPE CHIPPER SPOUT

WITH PNEUMATIC CYLINDER OPERATED COVER

Air operated cylinder lifts spout cover vertically approximately 2¾" to free jammed logs—saves time . . . eliminates accident hazards . . . safer to operate.

CAN BE INSTALLED ON ANY MAKE OF PULPWOOD CHIPPER

NO SPOUT PLUGGING. Jam-ups eliminated by use of the specially designed hinged cover on the new MURCO V-Type Spout . . . hinged cover is operated by the double acting pneumatic cylinder with valve located convenient to chipper operator.

OPERATED FROM NORMAL AIR SUPPLY. Air cylinder operates at pressures from 50 to 100 lbs. per square inch.

V-TYPE SPOUT HOLDS WOOD FIRMLY. Holds any size stick firmly because of specially designed V-shape. Wood moves in a straight line with no side movement to disturb cutting. Sawdust reduced to a minimum; and chip quality improved.

HEAVY DUTY DESIGN FABRICATED STEEL . . . bed knives arranged for easy removal. Spout bed knives are precisely positioned in relation to disc knives resulting in a shearing action, producing quality chips, yet eliminating splinters and sawdust.

Write today for complete details . . . specify make and size chipper on which MURCO V-Type Chipper Spout with pneumatic cylinder operated cover is to be used.

SPOUT COVER RAISED VERTICALLY APPROXIMATELY 2¾"

MURCO

75 YEAR

D. J. MURRAY MANUFACTURING CO.
MANUFACTURERS SINCE 1883 WAUSAU • WIS

from the area; G. EDWARD GIBSON, area supervisor—woodlands, comes from the wood control dept. of Gulf States Paper Co., Tuscaloosa; EMMETT CONN, field supt.—woodlands, former gen. field supt. for the Swift-Hunter Lumber Co. in Atmore, Ala.; EUGENE KELLER, area supervisor—woodlands, comes from the Ozark Badger Lumber Co. in Arkansas; JOHN W. GRIFFITH, area supervisor—woodlands, comes from the Gypsum Co. in Altavista, Va.; and JAMES ANDERSON, chief accountant, formerly in charge of invoicing, statistics and tabulating in Menasha.

Midwest

Memo from DGC

Wedding bells rang out May 31 for FRANK MARCHETTI of Titanium Pigment Corp. He and his bride, GABRIELLA TOMASSONI, are honeymooning in Europe, returning in September. . . .

WALLACE K. GRAVES, asst. gen. sales mgr. of International Paper Co., announces new appointments in the fine paper and bleached board div.: LAWRENCE B. KELLEY becomes mgr., merchant sales; WILLIAM G. LUKE JR. becomes asst. mgr., merchant sales; RUSSELL E. CHASE JR. is new asst. mgr., publication sales; and LOUIS CHABLE JR. is regional mgr., New York sales. . . .

Champion Paper and Fibre Co., Hamilton, O., announces personnel changes: DWIGHT J. THOMPSON became exec. vice pres. for personnel and public relations; HENRY W. RIGBY, exec. vice pres. for corporate development; HERBERT T. RANDALL, sr. vice pres.—licensing and special projects; ROBERT C. HAYNIE, vice pres. for planning; A. S. ANDERSON, director of personnel admin. on gen. office staff; and BENJAMIN V. WRIGHT JR. director of finance. Four new operating divisions were established, with Vice

Harold F. Zigmund Named V.P. i/c Mfg., Blandin Paper Co.

. . . with overall responsibility for all manufacturing at the Grand Rapids, Minn., firm. Mr. Zigmund has been with Blandin for four years as asst. to Exec. V.P. and Gen. Mgr. Myles Reif. He graduated from Syracuse U. and was with Mosinee Paper Mills before joining Blandin.

THE IDEAL PAPER MACHINE FELT

The FELT of proper weave and texture that properly fits the machine.

The FELT that has the toughness of fiber to take punishment and deliver maximum service.

The FELT that has pliable fibers and has the quality of fiber that will not mat and slow up the drainage prematurely.

The FELT that will resist chlorine, sulfuric and muriatic acids.

The FELT that will resist bacteria where bacteria is present.

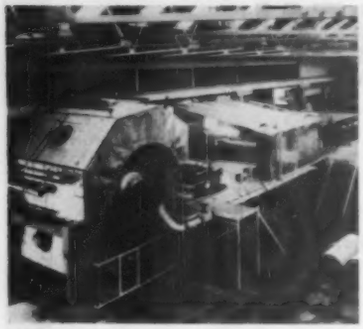
Knowing all the conditions pertaining to any given machine, Orr field men specify Orr felts with painstaking care. Consult them on your felt problems.

Orr-Chem and Orr An-Bac treated felts and standard untreated felts.

THE ORR FELT & BLANKET CO.
PIQUA, OHIO

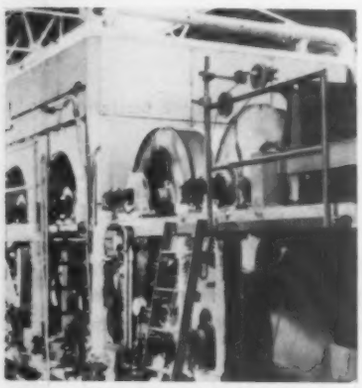
HIGH EFFICIENCY DRYING HOODS
GREENBANK SYSTEM

For one- and multi-cylinder paper and cardboard machines and pulp drying machines



Standard MG Hood with approximately 250° covering angle. Production increase up to 60%.

- **We increase the output of any machine subject to the drive, stuff preparation, and the wet part allowing for an increased speed.**
- **Steam consumption approximately 4000 lbs. per ton of paper increase in production.**
- **External supply fans and heaters unnecessary.**
- **Nozzles cannot block up.**
- **Easy access to cylinder face.**
- **Removable section for cylinder grinding.**
- **Simplicity of operation.**
- **Reconstruction of conventional hoods wherever possible.**
- **Considerable improvement of quality.**
- **Greenback High Efficiency Drying Hoods pay for themselves in a very short space of time.**



TW Hoods on top drying cylinders. 100% increase of drying capacity per cylinder. Ideal for predryer sections and normal multi-cylinder drying parts. Careful drying.

We shall be pleased to reply to your inquiry in detail.

Sole Sales Agents for Western United States and Mexico

Adamson Engineering Corp.

51 East Colorado Boulevard
Pasadena, California

PULP & PAPER Strictly Personal

Pres. Karl R. Bendetsen directing the pulp and paper mfg. div., assisted by John W. Zimmerman who also heads the expanded customer service organization. Leo Geiser becomes vice pres. and succeeds Mr. Zimmerman as Ohio div. mgr. A. M. Fairbrother is vice pres. and div. mgr. of the Carolina operation. A. W. Nelson Jr. is gen. mgr. of the new timber products div. Three men transferred from the Texas div. to Hamilton are: Richard L. Betts, asst. director of production; Jesse Rogers, staff asst. production planning, and Otto Wagers, admin. of safety. . .

R. A. Peterson, pres. of Valley Iron Works, is convalescing from surgery at his home and is getting along fine. . . . William R. Zimmerman, Moraine Paper Co., West Carrollton, O., was elected chairman of the Miami Valley div., AP&PM Supts. Assn., at its meeting June 13 in Piqua, O. James Ozias, Oxford Miami Paper Co., West Carrollton, was elected 1st vice chairman; R. O. Stephenson, Champion Paper and Fibre Co., Hamilton, 2nd vice chairman; and William Martin, Moraine Paper Co., secy.-treas. Donald J. Goodman, Sorg Paper Co., Middletown, was retiring chairman. A social hour, dinner, luncheon and golf tournament were sponsored by Orr Felt & Blanket Co. . . .

Dr. J. E. Killinger was appointed director of tech. sales service and field development for Penick & Ford, Ltd., Inc. He will reside and operate out of Cedar Rapids, Ia. John Bainbridge was named his admin. asst. in Cedar Rapids.

Skinner ..... Fannon

Skinner Heads Pulp Sales

Appointment of Harold Skinner as manager of pulp sales for Marathon, Division of American Can Co., Menasha, Wis., is announced by Russell C. Flom, director of the company's pulp, paper and paperboard sales. Mr. Skinner, for some years supt. of the Rothschild, Wis., pulp mill, has moved his family to Neenah and will make his headquarters at Marathon's general offices. He succeeds Ralph Fannon who has retired after 12 years with Marathon. Mr. Fannon is a native of Wisconsin and graduate of the University of Maine.

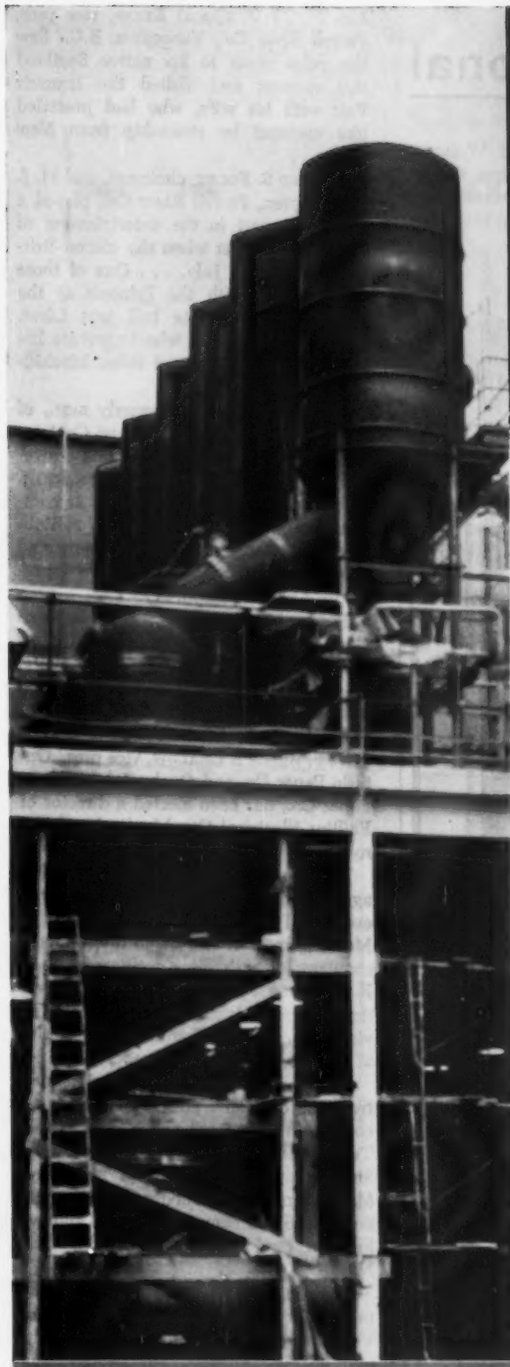
Frank H. Coldwell Heads New Dept. at Nekoosa-Edwards

Mr. Coldwell, formerly mgr. of power, heads a new dept. formed by merger of the engineering and power departments at Nekoosa-Edwards Paper Co., Port Edwards, Wis. Robert E. Simkins continues his present duties as mgr. of engineering in the new dept. William Laidig is steam supt., supervising all steam generating and associated equipment in the dept.

John Shelendich was named union div. supt. at Thilmany Pulp & Paper Co., Kaukauna, Wis. . . . J. M. Moon was elected exec. vice pres. of Signode Steel Strapping Co., Chicago, Ill. He will continue to direct Signode's sales activities. . . . Jack L. Murdock is new employment mgr. at The Mead Corp. Chillicothe div., Chillocothe, O. . . . John C. Young, formerly of Dow Chemical Co., joins Borden Chemical Co.'s Polyco-Monomer dept. as tech. sales rep. in the Ohio area with headquarters in Cleveland. . . .

Bert H. Cooper, vice pres. of Kalamazoo Paper Co., was elected the first pres. of the Paper Technology Foundation, Inc., formed early this year by the advisory committee on paper technology at Western Michigan U. Serving with him are Tom G. Fletcher, pres. of the Fletcher Paper Co., Alpena, as vice pres.; C. B. MacDonald, MUW comptroller, as treas.; and Dr. A. H. Nadelman, head of the WMU dept. of paper technology, as secy. . . .

All the 1958 seniors from the dept. of paper technology at Western Michigan U., Kalamazoo, Mich., have positions in the paper and allied industries. Harold Krieger joins American Boxboard Co., Grand Rapids, Mich.; Donald Harbron, Black-Clawson Co., Hamilton, O.; Everett Potts Jr., Kenneth Smith and Teodoro Reinhardt, Champion Paper and Fibre Co., Hamilton, O.; Joseph Streb and Leo J. Welling, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; Ronald Nolan, International Paper Co., Palmer, N.Y.;



All-Stainless CONKEY EVAPORATOR

goes to work on MgO Process at Weyerhaeuser

- **Continuous heat transfer obtained with scale forming liquor**
- **Complete chemical and heat recovery effected from all waste liquor**

This Conkey® sextuple effect, forced circulation evaporator is now in regular operation on waste sulphite liquor from the MgO process at the new 400-ton Cosmopolis, Washington mill of the Weyerhaeuser Timber Company.

In order to insure continuous evaporation of this scale forming liquor, with minimum maintenance, the unit was fabricated of all-stainless steel. It is also designed so that continuous sextuple effect operation is maintained even when bodies are cut-out for cleaning.

This is another example of how Conkey Evaporators are engineered to provide economical, *continuous* performance at a high rate of heat transfer. They are fabricated and erected to exacting requirements in CB&I's four strategically located plants.

Our facilities include design, fabrication and erection facilities for steel plate and special, clad or partially clad, structures for the pulp and paper industry. Write our nearest office for complete information.

Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston • Kansas City (Mo.)
New Orleans • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • South Pasadena • Tulsa
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, GREENVILLE, PA. and at NEW CASTLE, DELAWARE.
In Canada: HORTON STEEL WORKS LTD., TORONTO, ONTARIO

Weyerhaeuser's all-stainless, sextuple effect Conkey Evaporator is equipped with all controls for full automatic and continuous operation. Two other Conkey Evaporators are in operation in the same process at the company's Longview Mill.

PP-21

PULP & PAPER

Strictly Personal

RICHARD POST, Kalamazoo Paper Co., Kalamazoo, Mich.; JOHN GRETTUM, The Mead Corp., Chillicothe, O.; ROBERT FRAIK, New Jersey Zinc Co., Palmertown, Pa.; ROBERT YIN, Philippines Paper Co., Manila, P.I.; SPENCER B. SMITH, Rhinelander Paper Co., Rhinelander, Wis.; DANIEL BURLING, S. D. Warren Co. central div., Muskegon, Mich.; and GEORGE LAWTON, West Virginia Pulp & Paper Co., Luke, Md. Two of the men will do graduate work: WILLIAM FOSTER at the Institute of Paper Chemistry, Appleton, Wis., and DAVID BORN in the school of business at WMU. . . .

Canada

Memo from CLS

WALTER KOERNER, pres. of Alaska Pine & Cellulose, Ltd., Vancouver, B.C., has been elected a director of Rayonier Inc. . . . J. A (JOCK) KYLES, vice pres, Powell River Co., Vancouver, B.C., flew the polar route to his native Scotland this summer and visited the Brussels Fair with his wife, who had preceded him overseas by steamship from New York. . . .

HAROLD S. FOLEY, chairman, and M. J. FOLEY, pres., Powell River Co., played a prominent part in the entertainment of Princess Margaret when she visited British Columbia in July. . . . One of those who danced with the Princess at the Lieut-Governor's state ball was Lieut. Col. A. A. HUGMAN, who in private life is manager of newsprint sales, MacMillan & Bloedel. . . .

WILLIAM SADDLER, formerly mgr., of sales, eastern area, for Bathurst Containers, Ltd. subsidiary of Bathurst Power & Paper Co., Ltd., has been named asst. to director of sales, with offices at company headquarters in Montreal. . . . ROBERT W. HAUPTLE has been appointed vice pres. and gen. mgr., Prairie Fibreboard, Ltd., Saskatoon. . . .

PERCY M. FOX, pres., St. Lawrence Corp., Montreal, has been awarded an honorary degree by Bishop's University, Lennoxville, Que. . . . G W. FREDERICK has been appointed eastern div. mgr. for Westminster Paper Co.'s Crabtree Mills div. . . . BRUCE B GRALOW, vice pres., Ontario Paper Co. and Quebec North Shore Paper Co., has been elected a director of Phillips Electrical Co., Montreal and Toronto. . . .

HAROLD G. TIMMIS, mgr. of the Wayagamack div., Consolidated Paper Corp., exchanged positions with WILFRID D. MOSHER, mgr. of the Belgo div. under a company job reshuffling arrangement. . . . E. T. BUCHANAN, mgr. of the corporation's Laurentide div., has been elected vice pres. of the Engineering Institute of Canada, representing Quebec. . . .

L. F. PATTERSON has been named treasurer of Don Valley Paper Co., according to announcement by J. M. THOMPSON, vice pres. finance, Howard Smith Paper Mills, parent company. Mr. Patterson, a certified public accountant, joined the company in 1946 following war service in the Royal Canadian Navy.

A. E. PENNEY has been appointed vice pres. pulp mfg. Columbia Cellulose Co., Vancouver, B.C., which operates a pulp mill at Port Alberni. Mr. Penney was with Brown Corp. at La Tuque, Que., and in Berlin, N.H., before moving to the coast in 1956.

RALPH H. W. JAMES is new tech. supt. of Columbia Cellulose Co., succeeding T. M. HUGHES, who resigned to join West Virginia Pulp & Paper Co. in Maryland. Born in Plymouth, England, Mr. James was educated at Birmingham University and was employed for some time by Courtauld's, Ltd., on research problems in manufacture and spinning

WESTERN WAYS INC. photo

100,000 TONS OF PULP CHIPS

have been stockpiled at the new Georgia Pacific paper mill at Toledo, Oregon, with a Rader high pressure pneumatic conveying system. More than 2 tons per minute are blown from a rail car unloading pit to a tower 550 feet away, then to all corners of the pile through use of portable pipe sections. Another Rader system has recently been installed at Toledo, blowing chips 2200 feet across the bay in the background, from Georgia Pacific's sawmill directly to the storage pile.

RADER PNEUMATICS, INC.

1739 N. E. 42nd Avenue Portland 13, Oregon

Room 716 No. 10 High St. Boston, Mass. | 4645 Main St. Vancouver, B. C. | Box 61 Eureka, Cal. | Preston, Ont. Canada | Box 3386 Memphis 17, Tenn.

of viscose yarn. In 1950 he joined the staff of the Pulp & Paper Research Institute of Canada and joined Columbia Cellulose as a research chemist in 1954.

Leighton . Stapleton . Peterson . Crossland

Stowe-Woodward Establishes Leighton Fellowship

Stowe-Woodward, Inc. has established the Ralph M. Leighton Fellowship at the University of Maine to honor Mr. Leighton's long years of service to the paper industry and to Stowe-Woodward, Inc. He is a Maine alumnus.

Purpose of the fellowship will be to shed light on problems in which rubber rolls are involved. It will be awarded one graduate student every year. This presentation was made at Stowe-Woodward's sales engineering conference at Pocono Manor, Pa. Charles E. Crossland, acting president of Maine, and Raymond Henry Fogler, president of the trustees, accepted the fellowship from D. W. Stapleton, president of Stowe-Woodward, and E. W. Peterson, chairman of the S-W board.

Northeast

Memo from MRC

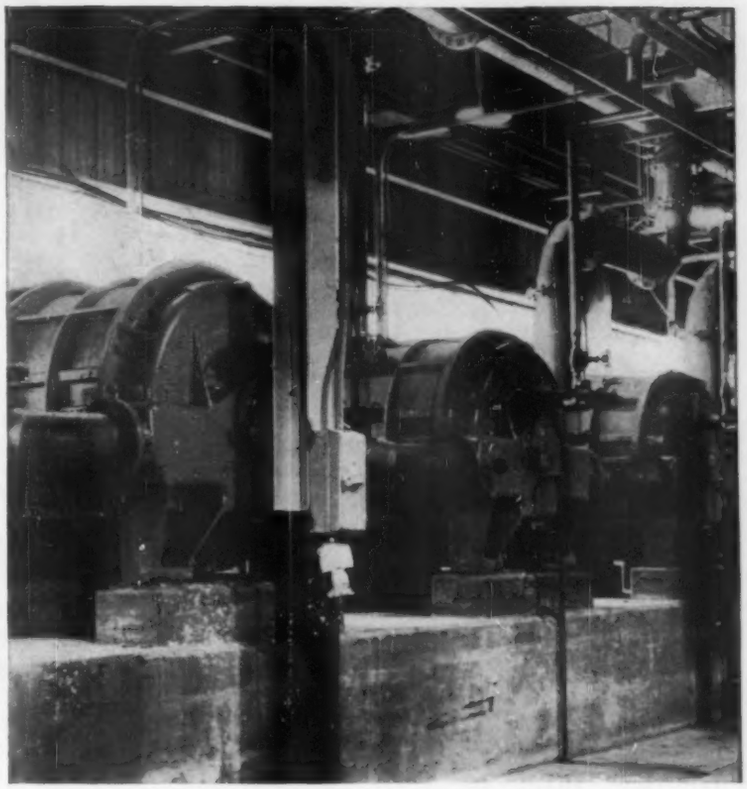
Everett P. Ingalls, Jr. has joined St. Croix Paper Co. as production manager. Previously with S. D. Warren Co., he has a b.s. in chem engineering from U. of Maine. . .George Fuller, general supt. at St. Croix expects to retire in 1959. Jeff Farmer, plant engineer steps up as service manager, a new post to coordinate mill service depts. Jack Vozella, asst. plant engineer becomes plant engineer. . .

Paul Koenig, vice pres. and comptroller, P. H. Glatfelter Co., has retired . . .Joseph R. Carney is now staff production mgr., Oxford Paper Co. in New York, moving up from staff asst. in manufacturing. William C. Macadam, previously mgr. of woodlands dept., asst. treasure and purchasing agent of Champion-International Co., is now asst. manager, purchasing dept. for Oxford Paper Co. in New York. Oxford's Dwight A. Rumery moves to Rumford, Maine as p.a. there. . .

James E. Jones has joined APPA as secretary of industrial relations committee, succeeding Harrison J. Daysh, resigned. . .Ray Kirvin succeeds Edwin T. Gibson as director of r and d for the Kraft Paper Assn.

R. G. Macdonald, formerly secretary-

What, actually, do Vacuum Pumps on paper machines handle?



Paper mill engineers know that it is actually a mixture of air and water vapor, but the custom of rating vacuum pumps in terms of air capacity alone causes this important fact to be frequently overlooked.

The presence of this water vapor causes a considerable reduction of the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump the bulk of this water vapor is effectively condensed, due to the Nash operating principle. The air handling capacity of the Nash is therefore not reduced.

That is one of the reasons why Nash Vacuum Pumps are standard in over a thousand leading Paper Mills.

NASH ENGINEERING COMPANY

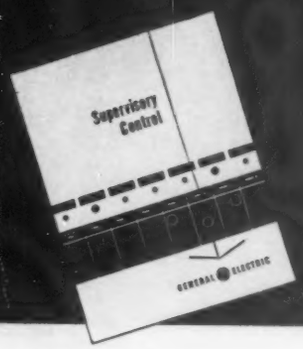
443 WILSON ROAD, SO. NORWALK, CONN.

SUPERVISORY CONTROL

New remote operation economy regardless of control distance for:

- power distribution
- motors
- valves
- pumps
- industrial water systems
- any piece of electrical apparatus which has provisions for local control

FREE BULLETIN!



SECTION G513-8
GENERAL ELECTRIC CO.
SCHENECTADY 5, N. Y.

I'd like full details on the application of General Electric Supervisory Control Equipment.

NAME_____

COMPANY_____

STREET_____

CITY_____

STATE_____

Progress Is Our Most Important Product

GENERAL ELECTRIC

Strictly Personal

treasurer, TAPPI, is now executive secretary-treasurer. PHIL E. NETHERCUT, former technical secretary advances to asst. executive secretary. . .Welcome back to an old hand—CHARLES H. "BERT" KENT is now a consultant to the paper industry for Adell Chemical Co. in Holyoke, Mass. Mr. Kent was resident manager of Hercules Powder Co.'s Willimansett, Mass. plant until retiring a few years ago; had been special assistant to the president of Hadley Falls Trust Co. most recently. He will expand Adell's services for d-i Lestoil to the paper industry. . .RAYMOND C. MATEER, exec. v.p., Scott Paper Co. has retired after 45 years of service. He started as a helper in 1913. Scott President THOMAS B. MCCABE says executive functions will be carried out by management committee comprising Scott v.p's. PAUL C. BALDWIN, HARRRISON F. DUNNING, JAMES L. MADDEN, G. WILLING PEPPER and ANDREW J. SHRODER 2nd . . .

DONALD W. DANFORTH, recently general supt. Brewerpaper mill of Eastern Corp., has joined John W. Bolton & Sons, Inc., as director of research and development. . .VINCENT P. MAHON, former sales rep in Houston for Lunkenheimer Co., moves to Boston, Mass. as branch manager. . . . O. R. STEFFENS is now manager and P. J. SHIRLEY asst. mgr. of the eastern technical sales service, paper and food divisions of Penick & Ford.

W. M. GROSS is now a v.p. of Infilco, Inc., with headquarters in New York. ALLEN A. LOWE, asst. v.p. and MRS. AGNES B. PALMER, advertising dept.. Sandy Hill Iron & Brass Works, received a citation of merit for the company's business paper advertising. . .JOHN S. ROBINSON is new sales rep for Becco Chemical Division for New England working out of Framingham, Mass. . . GREGORY KLEBANOFF, formerly with Bulkley, Dunton Processes moves over to The Permutit Co. to handle sales of the company's flotation equipment including the flotation equipment which B-D has sold to Permutit. . .

SAM S. HARKAVY, director of paper dept., Geigy Dyestuffs and DUDLEY NIXON are celebrating Geigy's bicentennial anniversary. Congrats . . . CHARLES R. A. HARTIG, president of Gaillet & Hartig Co., Inc. has joined Reinhold-Gould Inc. as vice president, Gaillet & Hartig Div. . . . N. N. CAHAN moves from New York City to Syracuse to set up an office for Infilco Inc. . . . Hammermill Paper Co's. Purchasing Agent HERMAN C. WEBER has been elected president of the Erie Purchasing Agents Assn. and also treasurer of Marquette Building and Loan Assn. . . .

LARRY VALMORE, technical service rep for Lockport Felt Co. is now sales rep in the Penjerdel region, succeeding RUSSELL E. GREY, who was killed in an accident last April. . . . JAMES H. THOMPSON has been promoted to development analysis at Diamond Gardner Corp. . . .

LOUIS R. LAWSON JR. has been named by West Virginia Pulp and Paper Co. as eastern district manager of kraft paper sales with headquarters in New York. . . . WALTER H. MONJE succeeds JACK W. HARTUNG (now director of purchases) as manager of the purchasing dept., St. Regis Paper Co. . . . RICHARD SANDERSON JR. is export manager of St. Regis' kraft division's international dept. . . .

St. Regis changes name of its kraft division to kraft and converting products division. REGINALD L. VAYO is v.p. i/c of this new division in which sales activities of the former kraft division are combined with those of Rhinelander Paper Co. and The Gummed Products Co. Four sales dept., each headed by a general manager have been set up under direction of Mr. Vayo. WILLIAM J. DAVIS heads up the paper dept. for St. Regis kraft paper, Rhinelander Paper products and Gummed Products production except board. JOHN E. BECKER heads up the pulp dept. for Alberta Hi-Brite and Tacoma pulp; THOMAS E. BUTTON heads up board dept. for all St. Regis and Gummed Products board and LAUGE H. CHRISTENSEN heads up all foreign sales for the international dept. . . .

RICHARD T. DANDO steps into sales for Albany Felt Co. in Vermont, western Massachusetts and New Hampshire and eastern New York.

Pacific

Memo from LHB

CHARLES KLINE, supt., U.S. Gypsum mill, South Gate, Calif., and Mrs. Kline have a new baby girl in their family. . . AL SMITH, purchasing agent, Fibreboard Paper Products, Vernon, Calif., took his wife on her first trip to the Pacific Northwest for a vacation. . .

TOM JORDAN, formerly at Hopewell, Va., and now resident mgr. at the Potlatch paper mill, Pomona, Calif., and ERNIE ZANS, supt., along with others there are pleased their new No. 4 Black-Clawson Fourdrinier made a smooth startup. . . .IVAN NICHOLS, res. mgr., JACK CUMMINGS, plant supt., and DR. LOREN GIERSCH, paper machine supervisor, who moved down from Camas, put their sec-

TO HELP YOU PROCESS MORE PROFIT FROM PAPER

OK BRAND

STARCHES

the complete paper mill line...

OK Keogel—An effective cold water swelling beater additive. Simple to use ...no cooking...just add to beaters. Requires no involved equipment or cooking procedures. Disperses readily ...causes no "Fisheyes." High resistance to breakdown...for better starch retention and higher strength tests and fiber bonding.

OK Keofilms—Complete range of controlled viscosity thin boiling starches ...adaptable to many surface sizing problems.

OK Keozyme—High purity, consistent, carefully processed corn starch for enzyme conversion. Exacting quality control to insure low residue and optimum conditions for proper enzyme action. For surface sizing or pigment coating binder this starch offers highest quality available.

OK Keoclors—A new line of oxidized starches...for coating adhesive and surface sizing application. Surface sizing at press or calender will benefit from controlled and stable viscosity, good penetration and color. Adhesive strength and colloidal characteristics offer improved bonding and operation for medium and low solids pigments coating.

OK Keocote—Enzyme converting corn starch with lower than normal peak viscosity. Particularly adaptable to operations requiring conversions at high starch solids or in presence of pigments. Low initial viscosity permits more rapid heat transfer and even conversion.

OK Special—Starches will be formulated for your needs... phone or write for a Hubinger paper starch representative who will be glad to help you solve any starch related problem.

The Hubinger Company

HUBINGER 77 YEARS QUALITY PRODUCTS from CORN

KEOKUK, IOWA

New York • Chicago • Los Angeles • Boston • Charlotte • Philadelphia

Strictly Personal

ond "Little Machine" in tissue, built by Beloit, into production in August at Crown Z, Los Angeles. JIM MEYERS, from Central Engineering, Seattle, assisted. . . GUS SWANBURG, a veteran from Fernstrom ownership years at Pomona, was looking as young as ever, as he continues production checking at Pomona for Potlatch. . .EARL BULLOCK, from Lewiston mill, is back in Oswego, N.Y., running a paper cup plant for Potlatch. . .

LILLIAN PETRIE, whose son, GORDON, succeeded his father as western manager for Black-Clawson, just happened to vacation on Mount Hood, Ore., Timberline Lodge, when delegates from the Portland Engineering Conference arrived there. It was a happy reunion for her. She makes trips to Australia almost "regularly". . .BUCK FRANCIS and BILLY CLINES, both widely known in Coast industry circles, now top execs in American Potash in L.A., were sorry not to get to Portland, but PAUL F. STUB, Portland, Ore., district mgr., did a good job representing them. . .A "Hawaiian motif" made a party given by Reliance Electric, with C. V. (GREG) GREGORY, general sales mgr. from Cleveland, ANDY PERRIN, Western regional sales mgr., and others hosting, one of the highlights at the Portland conference. . .

During the Engineers Conference, RAY SMYTHE, who represents Rice Barton, Carthage Machine, etc., and Mrs. Smythe entertained a few old friends from the East at their summer home on a mountain stream part way up 11,000 ft. Mount Hood, including the ERNIE STONES (Rice Barton) and BUMPS HEMPHILL (Carthage) . . .WALTER SALMONSON and FRED IHLENBURG took friends over the Portland area in their Draper Felt plane or Walt's 31 ft. power boat on the Columbia. . .

GLEN E. MORE, production mgr. of industrial chemical div. of Pennsalt of Washington since 1952, moves from Portland to Tacoma as div. gen. mgr. according to pres FRED C. SHANAMAN. . .

Western Pulp Products Co. Inc., a Corvallis, Ore. firm manufacturing molded flower containers and planter boxes from waste paper, has changed ownership. W. T. DORSEY now heads the firm as president. Sellers were RALPH CHAPMAN, who built the plant and developed the process used, and FRED KREHBIEL. . .

LT. (j. g.) PETER J. ONKELLS, JR., son of Mr. PETER J. ONKELS, supt. of Pacific Coast Paper Mills, a div. of Puget Sound Pulp & Timber Co., was killed July 19 after his Navy jet fighter crashed during an operational flight off the coast of California. Lt. Onkels received his Navy wings in the summer of 1956.

Erickson . . . . . Morgan

Rayonier Elects New President

RUSSELL F. ERICKSON is new president and chief executive officer of Rayonier Inc., succeeding CLYDE B. MORGAN who becomes board chairman. WILLIAM A. PARKER, former board chairman, continues as a director and chairman of the executive committee. Three new directors, ARMAND G. ERPF, WALTER C. KOERNER and DONALD S. LESLIE replace CHARLES R. BLYTH, JONATHAN B. LOVELACE and CARL J. SCHMIDLAPP, all who resigned. Mr. Erickson joined Rayonier in 1946 as chief engineer of its chemical cellulose plant at Fernandina Beach, Fla. He is a graduate of the U. of Minnesota.

CUSTOM FABRICATIONS

Supts. Coast Division to Hold First Meeting in California

For the first time in its history, the Pacific Coast Division of the Supts. Assn., will hold a meeting in California on Dec. 4-6. Its new wing, the so-called Bay Area Group of about 50 members, is the motivating reason. The annual meeting will be in the Sir Francis Drake hotel in San Francisco.

Hugh Bolger, western mgr., Cameron Machine Co., and Andy Perrin, western regional mgr., Reliance Electric & Eng. Co., are Californians taking prominent roles, the former as chairman of committees and Mr. Perrin as chairman of arrangements.

Henry Dautermann, asst. paper mill supt., Longview Fibre Co., who is Coast division chairman, and Burke Morden, president of Morden Machines, secy.-treas., were leaders in a meeting in Portland, Ore., July 31 to organize the event. Kay Fralick, convention secretary; L. K. Smith, PULP & PAPER, from the San Francisco group; Gordon Petrie, Black, Clawson Co., John Ayers, DuPont, and Dean Brosche, Corn Products, took part.

The December meeting will emphasize converting operations, as well as pulp and paper, in a bid to draw a strong attendance from both the San Francisco and Los Angeles regions. It is expected total attendance will be about 350, including at least 100 wives.

Tours include one to the new expanded Crown Z operations at Antioch, Calif., and the Fibreboard San Joaquin division there, and also to converting plants.

John B. Fery, Gen. Mgr.
Boise Cascade Corp. Paper Div.

Mr. Fery will be responsible to Pres. R. V. Hansberger for all production and sales operations of new container plants at Wallula, Wash. and Burley, Ida., as well as the paper mill being built at Wallula. A graduate of University of Washington and Stanford Graduate School of Business, Mr. Fery, during the past 17 months has been working in the paper division as assistant to the president. His office is in Walla Walla, Wash.

new STRONG

ductile iron steam traps

give you cast steel service at less than half the price!*

Strong's new 540 series Hydro-Flex Steam Traps are made of DUCTILE (NODULAR) Iron that can be bent or twisted without breaking. This newest metallurgical development, adopted by ASME*, enables Strong to produce traps for service up to 500 psi and 650°F with ample safety factor. Ductile Iron economy permits sale of these traps at less than half the price of comparable cast steel traps.

*Ductile (Nodular) Iron meets the requirements of the ASME Code for use in vessels at pressures to 1000 psi and temperatures to 650°F (80% of cast steel service).

1. Safer to use because Ductile Iron body and cover will bend or twist in case of explosion or fire whereas brittle materials might shatter or break.

2. Especially recommended for drainage and drip service on high pressure steam systems and on both high and low pressure systems in chemical plants and refineries where steel is normally required.

3. Wide choice of sizes and capacities: Pipe sizes from ½" to 2", capacities to 42,800 pounds of water per hour.

4. Connections: Traps with screwed connections regularly furnished. (Although Ductile Iron can be welded or brazed under controlled shop conditions, welding is *not* recommended for field fabrication.)

Strong 540 Series Ductile Iron Traps are available from your local Strong Distributor. Call him for more information, or contact . . .

4/S

STRONG, CARLISLE & HAMMOND

508 SANDUSKY STREET • CONNEAUT, OHIO

air traps • strainers • reducing valves • vacuum or pumping traps
continuous blowdown valves • separators • engine stops • F and T traps

PULP & PAPER

Strictly Personal

Pulpwood Personals

JAMES J. WRIGHT succeeds H. E. NORTON as chairman of the Nevada State Board of Forestry. . . . MARTIN W. ONISHUK appointed fire prevention forester of Montana State Forestry Dept. and secretary of Keep Montana Green program. . . . KRAMER ADAMS, of Weyerhaeuser Timber Co. public relations dept., has been named a director of Outdoor Writer's Assoc. of America for a 3-year term. . . . MARTIN A. COYER becomes resident forester for Diamond Gardner Corp.'s Colorado operations with headquarters in Mancos. . . .

DR. WILLIAM A. DUERR, chairman of the forestry economics dept. at the New York State College of Forestry, will spend about a year in the Pacific northwest, making an economic analysis of trends and developments in the forest resource situation in western portion of Washington and Oregon, and northern California according to R. W. COWLIN, director of Pacific Northwest Forest & Range Experiment Station. . . .

FRANK G. DECKEBACH, forester (fire warden), CZ Clatsop tree farm has been promoted to contract logging supervisor, Clatsop tree farm. . . . JACK BENNS is new pres. of the Pettibone Michigan Corp., Baraga, Mich., announces E. J. Seifert, pres. of the parent company, Pettibone Mullikin Corp., Chicago. . . .

T. J. STARKER, retired Oregon State College forestry school professor devoting recent years to managing extensive acreage of second growth timberland he acquired, has developed a "rugged" tree-planter operable in sod, roots, and scattered rocks, enabling two men to plant up to 15,000 seedlings per day.

CHARLES B. DUNHAM, formerly director of forest operations, has been named vice pres., forest operations, for Columbia Cellulose Co. and Celgar, Ltd., associated subsidiaries of Celanese Corp. of America in British Columbia. Mr. Dunham, a graduate in forest engineering of the University of B.C., was logging manager of Bloedel, Stewart & Welch, Ltd, before joining the Columbia organization in 1953. . . .

CHARLES MILLWOOD, conservation forester for International Paper Co. at Georgetown, S.C., has been awarded the Honorary State Farmer degree, highest honor granted by the Future Farmers of America at a state level, as recognition for his contributions to the development of the organization's program in South Carolina. . . . W. J. BRIDGES, JR., mgr. of Union Bag-Camp's woodlands div. at the Savannah, Ga., mill since 1955, has been promoted to director of woodlands for the entire company. B. E. ALLEN, his asst. for the past three years, takes over as woodlands director in Savannah. . . . Bowaters Southern's subsidiary, Catwaba Timber Co., has appointed three foresters as new district forestry directors: DON CREIGHTON, RUSS HALLBERG and JOE SIMPSON. Newly appointed asst. dist. foresters are BOB WOMACK, formerly at Calhoun, Ga.; GABE PURVIS, forester at Manchester, Ga.; SAM LONG, from Jasper, Ga. and GEORGE POPE, onetime forester at Greenville, Tenn.

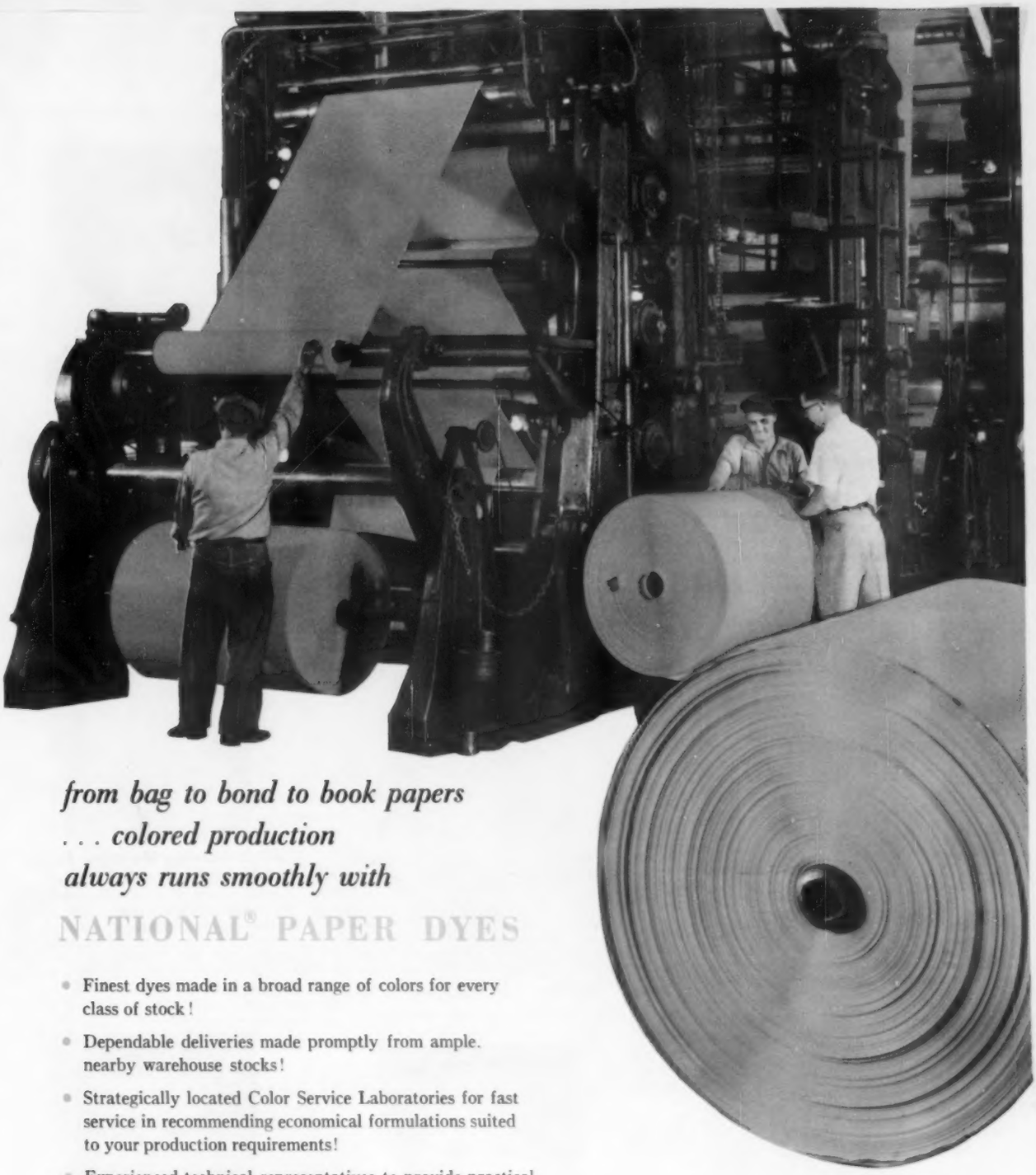
HENRY M. DENNIS, asst. vice pres. of Scott Paper Co. and manager of Timber Division on Pacific Coast, retires to become a consultant for Scott Paper, concerning himself with the operation of Mountain Tree Farm and the Canadian affiliates, Elk River Timber Co., Owikeno Lake Timber Co. and Northern Development Ltd. T. ROBERT SHELDON, formerly assistant to Mr. Dennis, succeeds him as manager of West Coast Timber Division activities. . . .

The "baby" of these three giant looms weaves a 240-inch width fourdrinier wire; the largest, a 292-inch wire.

This latest battery of looms — part of our continuing modernization program, — was added to serve the demand for increasingly large wires.

However, much smaller wires are still important to the greater part of the paper manufacturing industry, and our efforts are directed to producing — regardless of size — the very finest wires our 79 years of experience allow us.

EASTWOOD-NEALLEY CORP. BELLEVILLE NEW JERSEY



from bag to bond to book papers
. . . colored production
always runs smoothly with

NATIONAL® PAPER DYES

- Finest dyes made in a broad range of colors for every class of stock!
- Dependable deliveries made promptly from ample. nearby warehouse stocks!
- Strategically located Color Service Laboratories for fast service in recommending economical formulations suited to your production requirements!
- Experienced technical representatives to provide practical in-the-mill assistance when needed!

Photo: Scott-d'Arazien

That's more than a good deal! It smooths the way to profitable production of your colored lines and explains why so many leading paper mills rely on National Aniline for a substantial portion of their dyestuffs needs.

If you are not already enjoying the many benefits of National Dyes and service, why not start now by letting us formulate your current shades?

Allied Chemical

NATIONAL ANILINE DIVISION ALLIED CHEMICAL CORPORATION • 40 RECTOR ST., NEW YORK 6, N. Y.

Akron Atlanta Boston Charlotte Chattanooga Chicago Greensboro Los Angeles New Orleans Philadelphia Portland, Ore. Providence San Francisco Toronto

Harold A. Swanson, Nopco Director

Nopco Chemical Co announces election of Vice President Swanson to its Board. He is in charge of sales and laboratories of the company's Industrial and Fine Chemicals Divisions. A chemical engineer and lawyer with degrees from both Northeastern and George Washington Universities, Mr. Swanson has been with Nopco 21 years.

Earl S. Coey Named Vice Pres. of Hooker Chemical Corp.

. . . in charge of eastern chemical sales. Mr. Coey, formerly eastern sales mgr., joined Hooker after graduating from Amherst in 1937. Elected senior vice presidents were Frank W. Dennis, Dr. Earl L. Whitford and Robert E. Wilkin.

Harry L. Harner, Western Manager for Carpenter Tube

Mr. Harner, formerly Pacific Northwest sales representative of Alloy Tube Division, The Carpenter Steel Co., Union, N. J., has been appointed Western regional sales mgr. of the division. He will work out of Carpenter's San Francisco office. He joined Carpenter in 1956 after seven years with Studerus Oil Co., Inc.

G. D. Lewis Is New Mgr., Paper Machinery Div.

. . . of Dominion Engineering Works Ltd., Montreal, Que. He joined Dominion in 1946 and served in various engineering and sales capacities.

Keller, Bailey Engineer in South

R. T. Keller of Bailey Meter Co., Cleveland, O., has been appointed a resident engineer in Jacksonville, Fla., subdivision of the company's Atlanta district. Keller's headquarters are at 1422 Dancy St., Jacksonville, Fla. The Jacksonville territory includes all Florida and the southern tip of Georgia.

Carl C. Gehring Manages Paper Industry Sales For A. E. Staley

Promoted from tech. sales representative, Mr. Gehring takes over the new position of mgr. of paper industry sales in the central U.S. for A. E. Staley Mfg. Co., Decatur, Ill. Mr. Gehring is a graduate of the New York State College of Forestry and joined Staley in 1945.

John J. Burke, Jr. Joins Draper Felt Co.

He will cover New England area formerly covered by William N. Conor, Jr., who has joined the Bradford West Co., Pittsfield, Mass., who also sell Draper Felts. Mr. Burke was formerly with Manhattan Rubber.

Babcock & Wilcox Appoints Leon B. Wohlgemuth Gen. Sales Mgr.

. . . for the Tubular Products div. Mr. Wohlgemuth has been sales mgr. of middle states district sales offices. He joined B&W after graduating from the U. of Pittsburgh in 1936. Mr. Wohlgemuth will make his headquarters at the division's general offices in Beaver Falls, Pa.

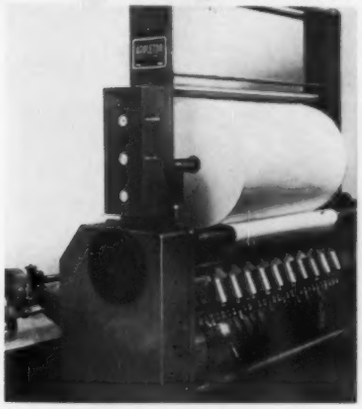
E. A. Alvord to West Coast for Sprout, Waldron & Co.

. . . Mr. Alvord, formerly of Meridian, Miss., moves to Olympia, Wash., announces Harold J. Alsted, vice pres. i/c sales, Sprout Waldron & Co., Inc. Mr. Alvord graduated from Michigan College of Mining and Technology and has 18 years experience in the industry. His home address is R.F.D. #4, Olympia.

New Equipment Section

Drum Winder and Slitter

. . . Has Air-Operated Cutters



Applications: Slitting paper, paperboard as narrow as ¼ in.
Advantages: Exclusive Doven shear cut principle permits inexperienced operator to reassemble cutter blades to .001 in. tolerance, no matter how often they have been ground. Air operated cutters allow simplified adjustment to insure equal pressure at all points while operating.
Specifications: Model SR-60 has web sizes from 36 in. to 125 in. wide. Standard model takes parent rolls up to 48 in. diameter. Optional equipment increases capacity to 60 in. Can be equipped with virtually any type of electrical or mechanical drive for varied applications.
Supplier: **Appleton Machine Co., Doven Div., Appleton, Wis.**

New Line of Tractors

. . . More Versatile than Ever

Applications: For wide range of jobs from light utility work to handling almost any type of equipment used in industry.
Advantages: New line has six-cylinder engines on the big tractors; new styling; increased power in most models; wide selection of gasoline, LP gas, distillate, or diesel engine; and power steering. Also more powerful hydraulic systems, Tel-A-Depth control of equipment, Visual Position Indicator for use with Traction-Control, three-point hitches, and Fast-Reverser attachment for quickly changing direction of travel.
Specifications: New tractors range in size from 12.8 estimated hp for Cub Lo-Boy to 72 hp of the larger 560 tractor, together with new line of Farmalls. Engine governor on six-cylinder engines operates effectively over range of 600 to 1800 rpm. Step-dome pistons, wedge-shape combustion chambers and angle of valves provide high turbulence of fuel-air mixture and controlled combustion.
Supplier: **International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., ANdover 3-4200.**

Claw Mixing Propellers

. . . Solve Mixer Problems

Applications: For mixing powders, soluble solids, and particularly those materials with stubborn tendency to remain lumpy.
Advantages: Save time and improve mixing results. Made of polished stainless steel plate.
Specifications: Available in stock diameters of 3, 4, 5, 6, 7, 8, 10 and 12 in.
Supplier: **Craddock Equipment Co., Inc., 1507 "A" St., Wilmington, Del., OL 5-6156.**

Electronic Tachometer

. . . Is Accurate over Wide Range

Applications: For measuring speeds from 0.1 to 10,000 rpm.
Advantages: Specific full scale range may be changed electronically by manual selector. Radial lines scribed on rotary disc interrupt light beam in the transducer (pickup) producing 360 pulses per revolution. These pulses are detected in the electronic circuit to operate large-scale, easy-to-read meter. Break away torque and inertia are extremely small. Detecting circuit and power supply are completely transistorized and enclosed in rugged, portable compact aluminum case.
Specifications: Unit with speed range of 0 to 1000 rpm has transducer 3¾ in. O.D. x 2²¹⁄₆₄ in. weighing 1¼ lbs. and indicator 7 in. x 6 in. x 9 in., weighing 5 lbs. Other speed ranges up to 12,000 rpm are available.
Supplier: **Southwestern Industrial Electronics Co., P. O. Box 13058, Houston, Tex., MOhawk 7-6611.**

Encapsulated Open-Type Motors

. . . Have Built-in Protection

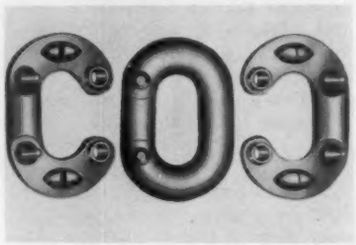
Applications: For use in areas where moisture, chemicals or dirt have previously made it necessary to use enclosed motors (in photo, completely-submerged motor, impervious to moisture, is churning bubbles at full rpm).
Advantages: An all-silicone-rubber insulating system for form-wound stator coils in large motors, and epoxy-encapsulated coil structures for field windings of large synchronous motor rotors and for stators of smaller frame motors with tandem or mush-wound coils are used in new Super-Seal line of open motors. Silco-Flex silicone rubber insulation for coil windings is vulcanized into a solid dielectric wall without joints, voids or breaks. Integrated field coils are bonded with epoxy-type resins and locked in a glass fiber laminate, completely sealing conductors and field pole from dirt and moisture. Sealed-coil design simplifies maintenance. Use of open motors instead of totally enclosed, fan-cooled types saves up to 60% of cost. Open motors can also be used in outdoor locations where enclosed motors formerly were specified.
Specifications: At present, frames 182 through 365 U, 3600 rpm and slower

speed epoxy resin Super-Seal units are in production.
Supplier: **Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., SPring 4-3600.**

Automatic Sampling Device
. . . For Sampling Wood Chips

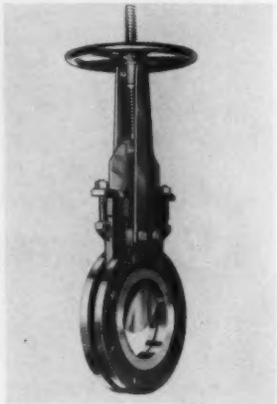
Applications: Made especially for sampling wood chips but easily adaptable to many down-flowing solids or liquids.
Advantages: Sampling palm is quickly thrust into and removed from stream, giving truly representative sample at that moment. Palm is held in horizontal position by a yoke during sampling and, when withdrawn, revolves to dump sample into convenient hopper.
Specifications: Device can be set to take samples at any interval from one a minute to one an hour. After specified period of time, usually 24 hours, samples are then combined into an accurate composite sample. Unit is equipped with ¾ hp motor and weighs about 80 lbs. Dimensions are 2 ft. x 2 ft. x 6 in.
Supplier: **Carthage Machine Co., Carthage, N. Y., phone 911.**

"Missing Links"
. . . Repair Chain Quickly



Applications: Connecting hooks, swivels or rings to chain, or repairing chain.
Advantages: In a few seconds the halves of "Missing Links" are joined simply by peening together, giving a connection that is stronger than welding and safer than cold shuts or cast links. The drop forged, heat-treated halves have integral rivets and interlocking lugs which evenly distribute the load.
Specifications: Available in all popular chain sizes, from 3/16 to 1¾ in.
Supplier: **Crosby-Laughlin Div., American Hoist & Derrick Co., Box 570 OH, Fort Wayne, Ind., EAstbrook 9646. Ask for Catalog No. 950-2.**

Inverted Stuffing Box
. . . Needs No Packing Gland

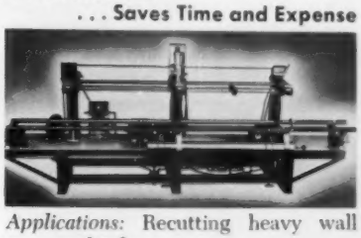


Applications: Used in bonnetless stock valve line and Fabri metering valves.
Advantages: Inverted stuffing box is of one piece construction and requires no packing gland. The chest ends help to compress packing to desired pressure. It is self-aligning, giving proper alignment between gate and valve seat and providing seal

available through representatives and distributors in over

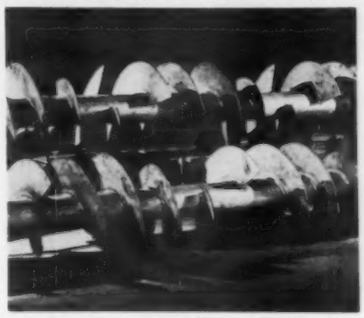
with minimum of gland bolt pressure.
Specifications: Available on wafer bonnetless stock valves, standard face to face bonnetless stock valves and Fabri metering valves in standard sizes from 2 to 24 in.
***Supplier:* Fabri-Valve Co. of America, P. O. Box 4352, Portland 8, Ore., ATlantic 8-5344.**

Core Recutter
. . . Saves Time and Expense



Applications: Recutting heavy wall cores and tubes.
Advantages: This new machine gives smooth, uniform cut to precise lengths with complete safety to operator, for a clean and more rapid cutting operation. Made in three different models to fit needs of plant specifications, it is available on short notice through sale or lease arrangement.
Specifications: Model CR-120 automatically adjusts to handle cores un to 220 in. with dia. of from 3 to 18 in. Produces recuts from ¾ to 110 in. Model CR-90 handles cores up to 150 in. with outside dia. of 3 to 18 in. and recuts range from ¾ to 75 in. Model CR-50 is non-adjustable and built to given dia. specifications for plants whose needs do not vary. Model has a standard bed length of 72 in. but can be varied. Recuts from ½ to 40 in. Free booklet available.
***Supplier:* Textile Paper Products, Inc., Cedartown, Ga.**

SS Screw Conveyors
. . . Solve Corrosion Problems



Applications: Stainless steel screw conveyors are used to cook wood chips in continuous digester in batteries of 6 to 12 per unit.
Advantages: Use of type 316 Armco stainless steel prevents corrosion. This type of screw shows no sign of corrosion after seven years' service in pulp mills. Advantages of continuous cooking may also be cited.
Specifications: Chips are fed into top chamber of digesters and carried through entire length of screw. They then drop out of opposite-end chamber into another chamber. Cycle is repeated in opposite direction to the end of the cook where pulp stock is discharged from lower chamber of the battery. Cooking is done by a combination of steam and pressure.
***Supplier:* Felker Bros. Mfg. Co., Marshfield, Wis.**

DuPont Opens Laboratory

Opening of a new $5 million laboratory at Wilmington, Del., provides service to customers and for evaluation of new or improved products of the Du Pont Co.'s Electrochemicals and Pigments Depts.

Although some facilities are shared jointly by the two departments, the building houses separate laboratories for product development in the paper, ink and allied chemical fields. The Pigments Dept. formerly operated service laboratories at Newark, N.J., and at Newport, Del.

cost-saving corrosion control

• Whatever it takes, Carpenter makes in stainless and high alloy tubing and pipe to most effectively and economically combat most corrosive agents. On the opposite page is a wide variety of standard and special-purpose analyses that can be supplied.

What's more, you get predictable performance in all *full finished* Carpenter corrosion-resistant tubing and pipe . . . it fully meets the high quality requirements for heat exchanger service. No short-cuts . . . no false economy . . . just the kind of on-the-job service that saves you operating dollars.

You can save up to 40% in first-cost dollars by using Carpenter stainless and high alloy tubing and pipe. Their overall consistent uniformity of O.D., I.D., gauges and physical properties assures you trouble-free, time-saving fabrication and installation.

Whatever your corrosion problem . . . ordinary or unusual . . . you'll get the right answer at Carpenter—"The House of Corrosion Control". You'll benefit from over 30 years' experience in helping industries and equipment builders to solve a vast assortment of problems.

Readily available to you are data on any specific alloy you're interested in, or our Selecting and Buying Guide to your 45 master keys to cost-saving corrosion control. Contact our nearest office or authorized distributor, or write direct to The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

40 cities . . . coast to coast

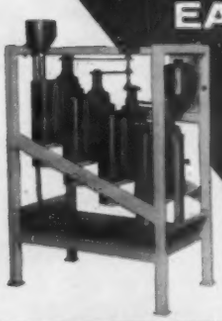
stainless tubing & pipe

Meet Huyck's
"HANS"

H. H. Dirzuweit, better known as "Hans", is a Senior Research Engineer in Huyck's Development Department. A graduate of R.P.I. and a papermaker for over 7 years, he serves the paper industry by working closely with paper mills to develop better felts and evaluation techniques. "Hans" and his group provide this special customer service to help you make better paper at lower felt cost per ton.

HUYCK FELTS
First in Quality . . . First in Service Since 1870

STOCK CONTROL MADE EASY



Get quick, accurate results with the Bauer-McNett Fiber Classifier.

For complete details and bulletin, write or call us at FAirfax 3-5501.

The Bauer Bros. Co.
HEADQUARTERS FOR PROGRESS
1758 Sheridan Ave. • Springfield, Ohio

PULP & PAPER'S CHEMICALS COLUMN

High Activity Flocculant

A new, high-activity, polyacrylamide-type flocculating agent, Separan NP20, has been added to its family of flocculants, The Dow Chemical Co. announces. Separan NP20 is "the most active material available on a unit weight basis," the announcement said. Less flocculating material may be used, or the same amount will provide more flocculating activity. Separan NP20 is a synthetic, organic, water-soluble, high molecular weight polymer which is manufactured as a white amorphous flake.

Flocculant Improvement

Production of an improved polyacrylamide-type flocculant known as Separan NP10 is announced by The Dow Chemical Co. A refinement of Separan 2610, its operational characteristics remain unchanged. All Separan 2610 production has been converted to Separan NP10.

Included among product improvements are higher purity, increased solution clarity and greater product uniformity. Separan NP10 is used in filtering, thickening and clarification in pulp and paper processing.

A-C Polyethylene Price Cut

Allied Chemical has announced price reductions on two of its low molecular weight grades of A-C Polyethylene resins.

Affected are grades 6A and 617A which have been reduced 5 cents per lb. The reduction brings prices for these powdered size grades in line with pellet sizes. Truckload prices of the two grades will be 30 cents a lb. Both are made by Allied's Semet-Solvay Petrochemical Division.

For Cleaning Felts

Neovadine AL, a unique product of CIBA Co., Inc., was originally developed as a retarding and stripping agent for the processing of textile fibers. It is a powerful dispersing agent, which extended plant runs have proven to be extremely effective for cleaning paper machine felts without damage to the wool fibers.

Neovadine AL contains no alkalies to cause shrinkage of the felt when cleaned at high temperatures and thus permits greater efficiency in the removal of color, fillers, sizing, pitch and other materials which normally soil or fill up press and pick up felts.

Coating Abrasion Resistance Test

A new method for determining the wet adherence of supported films to various bases has been worked out by Arthur S. Diamond in the paper service division of Kodak Research Laboratories, Rochester, N. Y. It provides a simple and precise means of measuring wet adherence or abrasion resistance of various coatings.

Mr. Diamond said that while the technique has so far been used only with emulsions applied to photographic film and paper, it could also be valuable in measuring a variety of coating materials and coated products such as organic coatings, protective and decorative papers. His method employs a pebble mill, charged with a specified amount of pebbles and fine quartz abrasive in water. A certain number of exposed film or paper samples are placed in the mill and abraded for several minutes, he said. The samples are then placed in an optical densitometer to determine photometrically the percent of emulsion area removed.

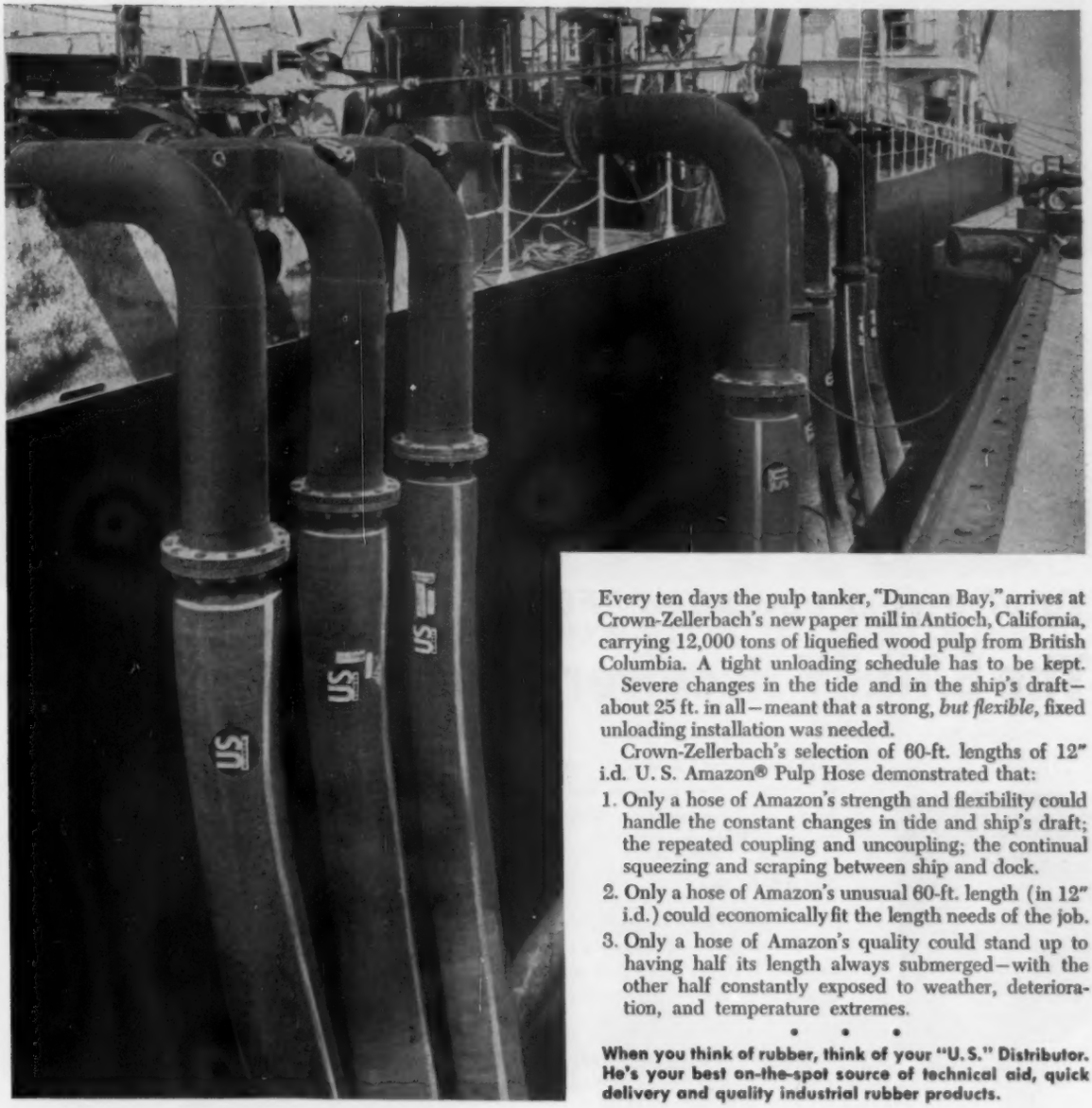
Increase
Paper Production
with
DUPASQUIER
DRIPLESS STEAM
SHOWER BOX

• Preheats the Web
U. S. patent 2,838,982.
• Changes Water Viscosity
THUS FREEING WET MAT
• Allowing Speed Increase
Custom Built for Any Machine
Write for Illustrated Folder
Canada Pat. 1955
Other pat. pdg.

J. H. DUPASQUIER
560 E. Clarendon St.
Gladstone, Oregon

AMAZON HOSE

Controlling time and tide —with 60-foot lengths of hose



Every ten days the pulp tanker, "Duncan Bay," arrives at Crown-Zellerbach's new paper mill in Antioch, California, carrying 12,000 tons of liquefied wood pulp from British Columbia. A tight unloading schedule has to be kept.

Severe changes in the tide and in the ship's draft—about 25 ft. in all—meant that a strong, *but flexible*, fixed unloading installation was needed.

Crown-Zellerbach's selection of 60-ft. lengths of 12" i.d. U. S. Amazon® Pulp Hose demonstrated that:

1. Only a hose of Amazon's strength and flexibility could handle the constant changes in tide and ship's draft; the repeated coupling and uncoupling; the continual squeezing and scraping between ship and dock.
2. Only a hose of Amazon's unusual 60-ft. length (in 12" i.d.) could economically fit the length needs of the job.
3. Only a hose of Amazon's quality could stand up to having half its length always submerged—with the other half constantly exposed to weather, deterioration, and temperature extremes.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

Mechanical Goods Division

United States Rubber

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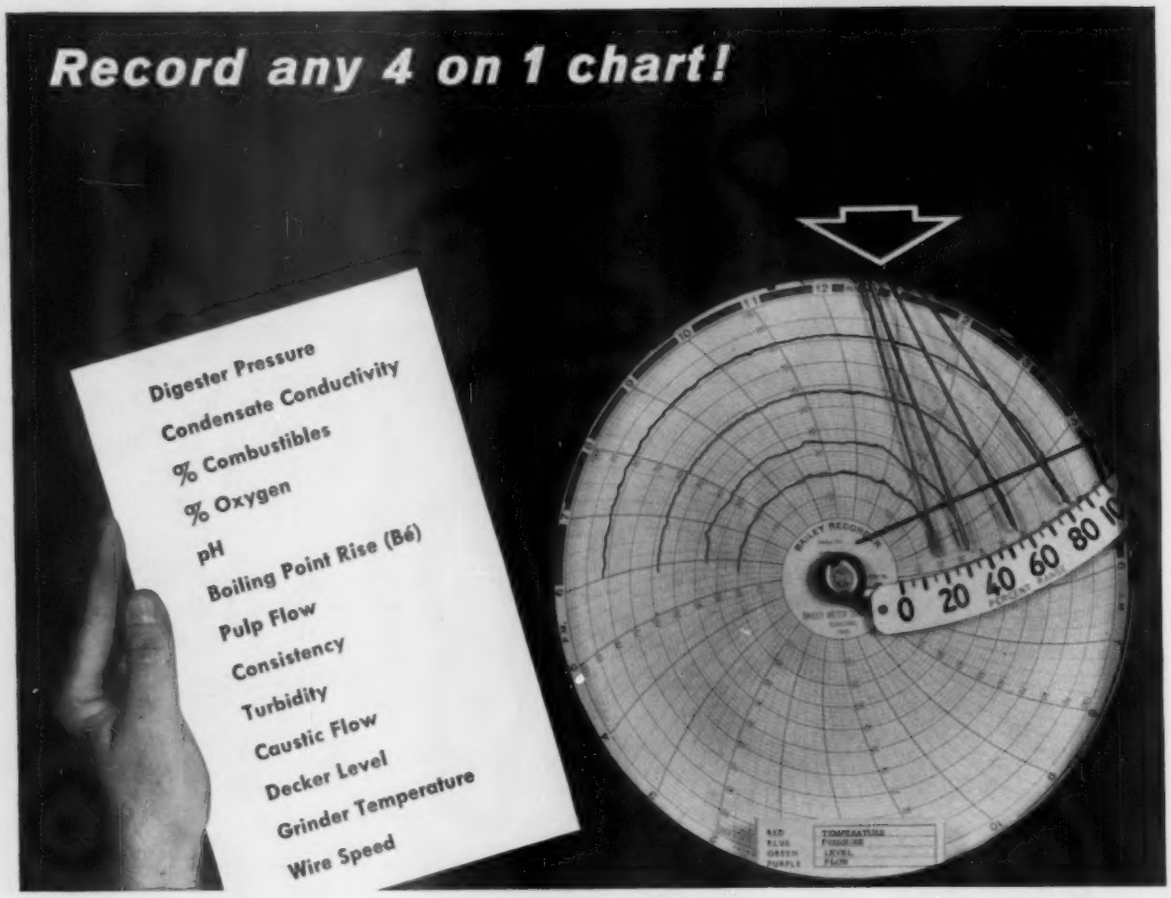

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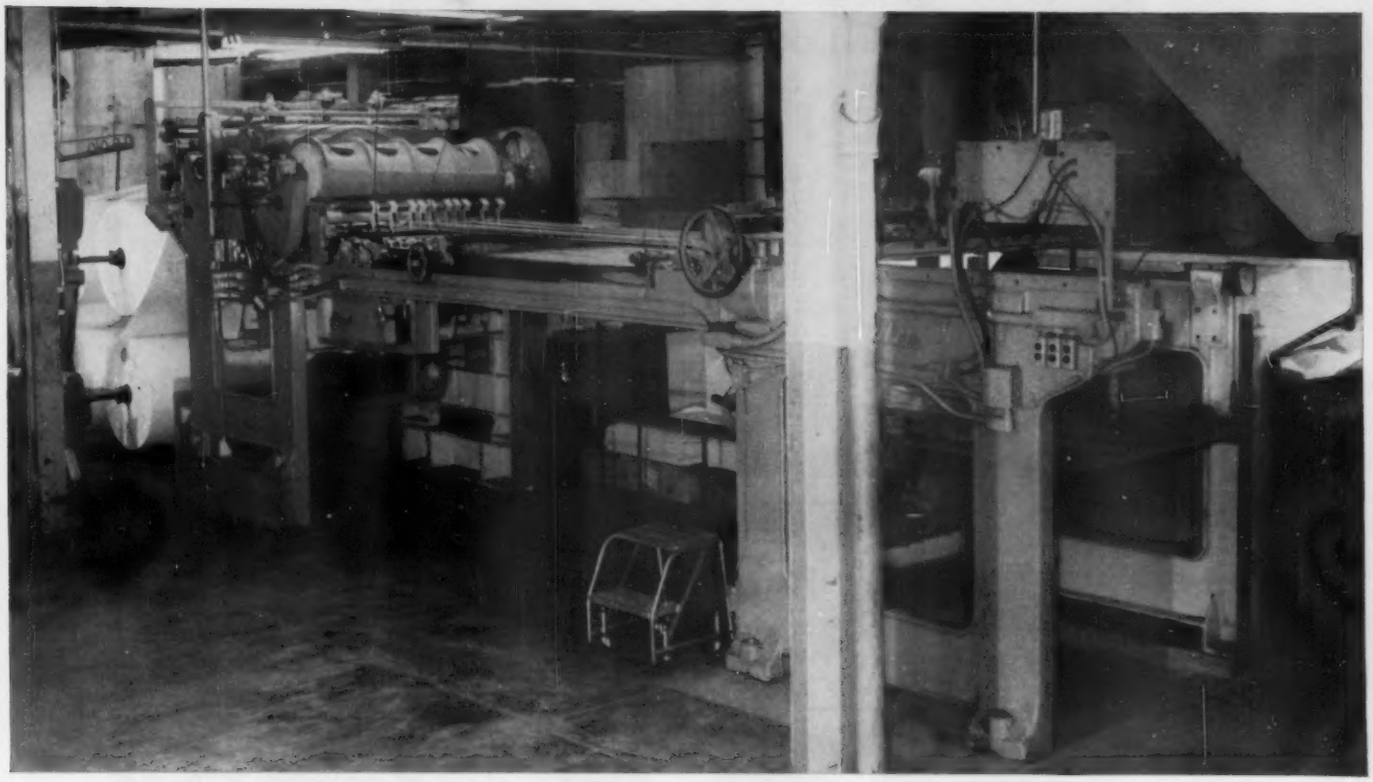

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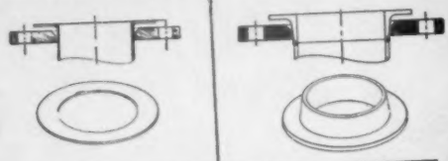
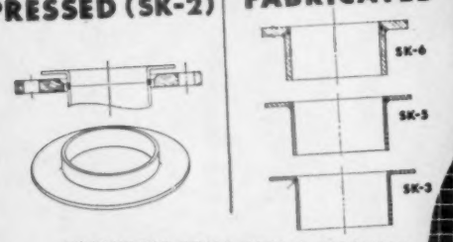


PRESSED (SK-2) | **FABRICATED**



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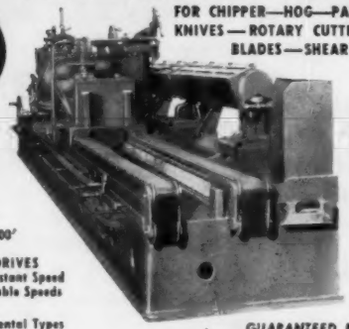

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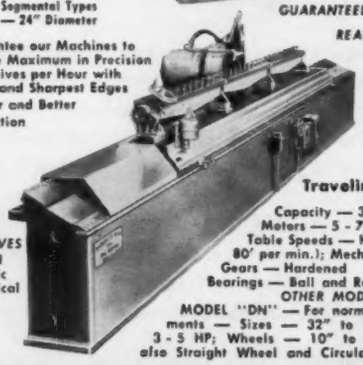

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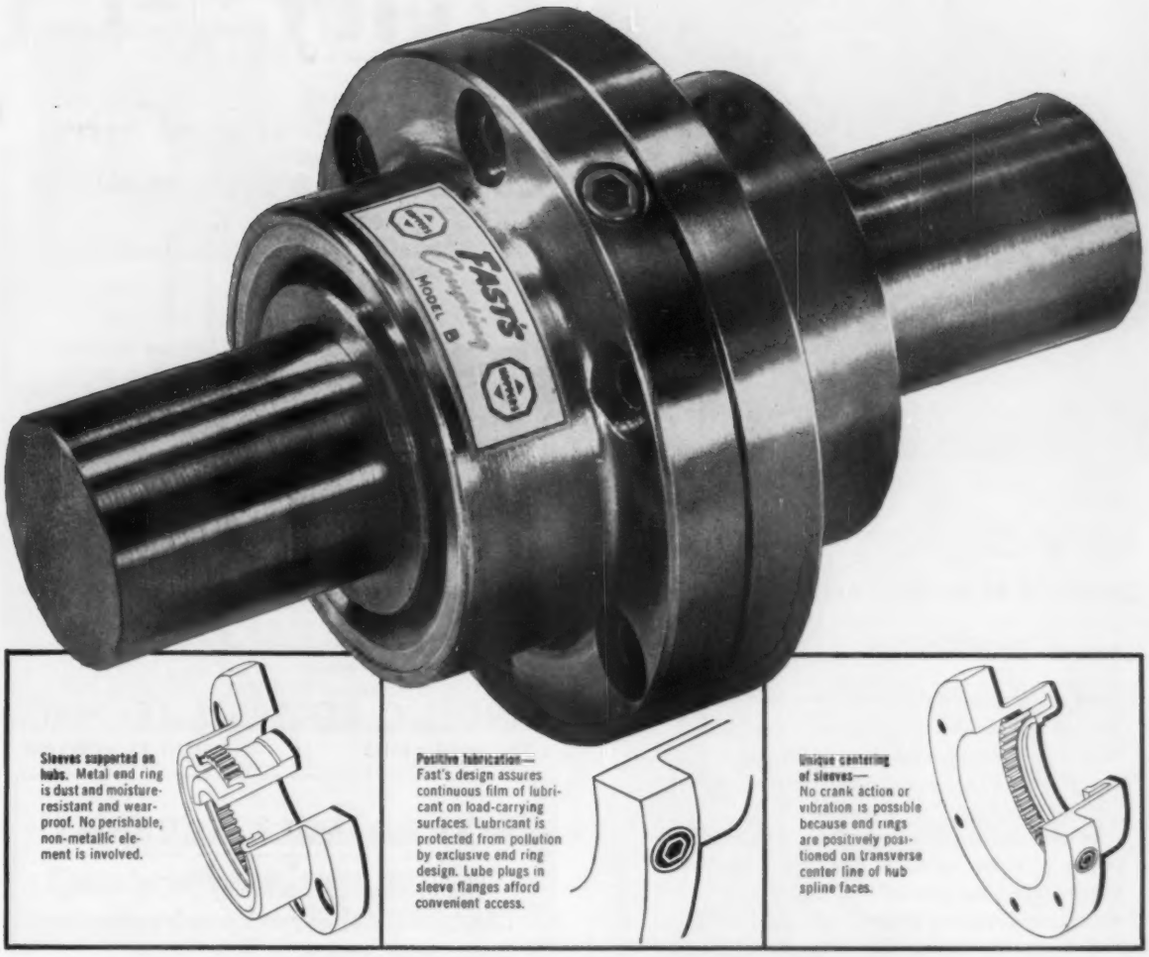

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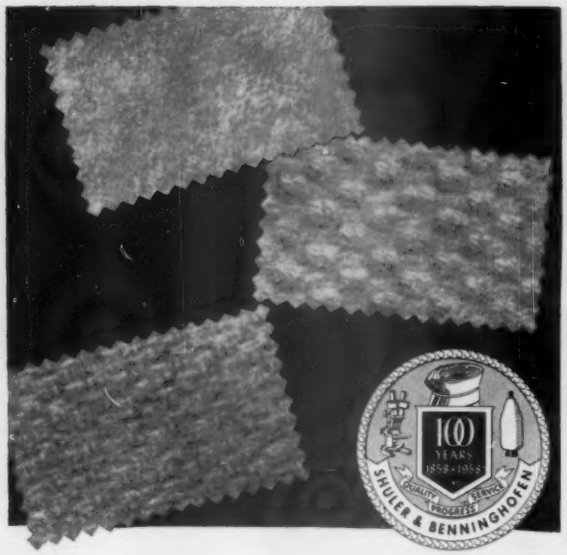

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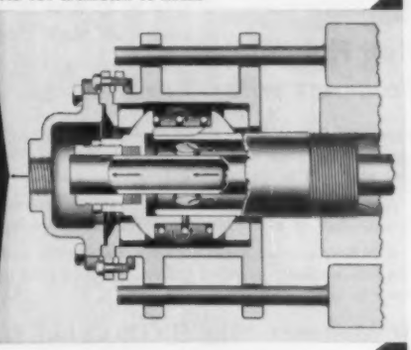

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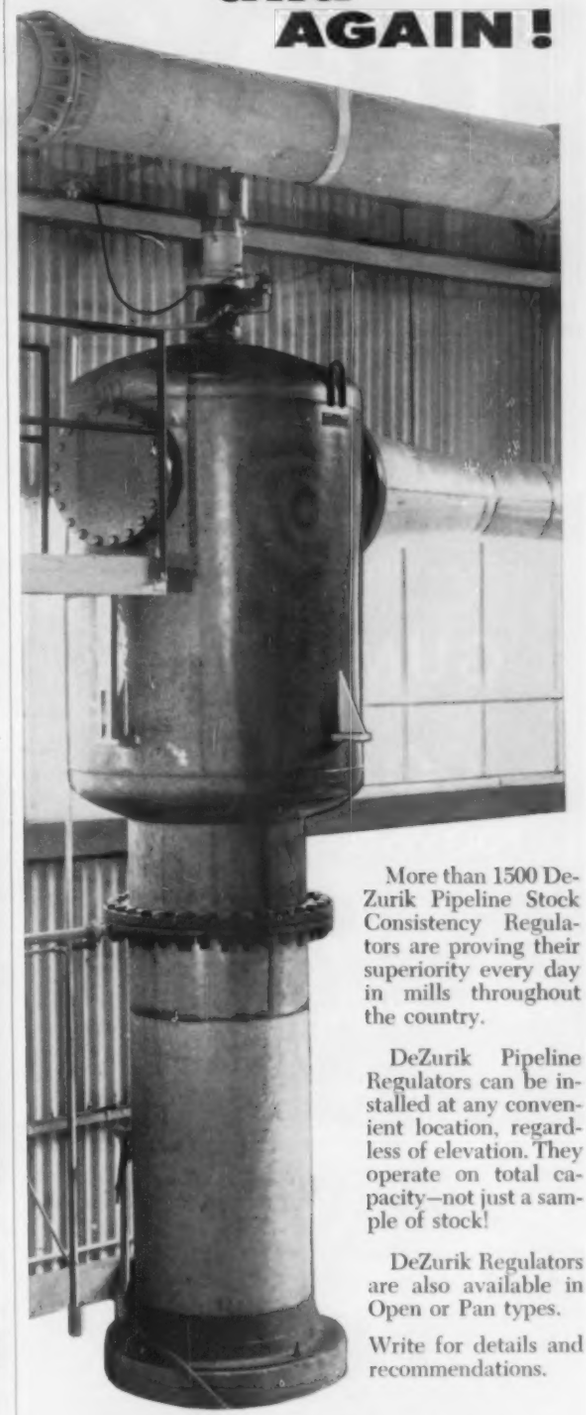

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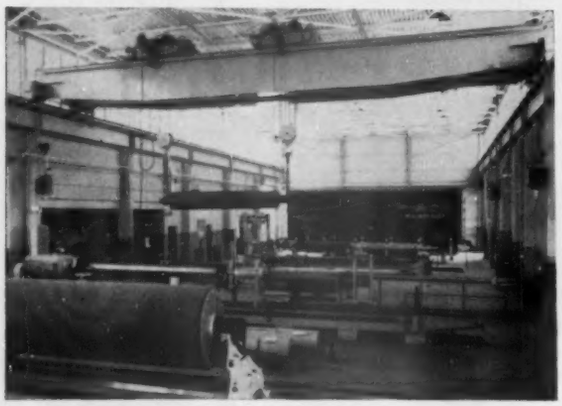

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The Last Word PULP & PAPER Editors' Page

Tiny Cell Overlays Improve Paper

As paper and paperboard industries well know, the producers of glass, plastic, wood, aluminum products etc., are not standing still. They are continually coming out with new products competitive with paper and paperboard.

It is common knowledge in this industry that National Cash Register Co., though not a part of the paper industry, has been in the forefront of developing new paper uses or improved papers.

So we weren't surprised to see a remarkable list of products N.C.R. has actually made in laboratories, while searching for ways to speed up use of its data processing equipment. A *Wall St. Journal* report mentions:

A crayon that will mark only a surface specially treated –inhibiting kids from marking walls.

Paper with a built-in ink supply–pen scratches or typewriter impacts break tiny cells to bring out the ink.

Facial tissue impregnated with perfume which will not evaporate until rubbing breaks the cells.

Paper towel that contains its own soap. Rubbing releases a highly volatile liquid detergent. When used, this quickly evaporates, leaving the towel ready for drying.

The goal for speeding up computing–characters would be formed on similar special paper in split second flash of a light, forming letters and numbers in the way a photo print is made.

Paper and paperboard industries are often indebted to researchers outside of their industries in development of new or broader markets.

Example of a Good Neighbor

During the past year, especially during the election campaign which saw the return of the Diefenbaker government, some U.S. corporations have been criticized in Canada for failing to give Canadians an appropriate degree of participation in management and financial returns. This was one of many disturbances to U.S.-Canada relations which were said to have precipitated President Eisenhower's trip to Ottawa, when things were plenty hot in Washington.

In spite of their large investment in Canada, U.S. companies in the pulp and paper field have escaped this criticism, due to their enlightened policy based on realistic recognition of the value of good neighborly relations in a country where they have established such a substantial long-term stake.

An example of this goodwill was recently provided by Crown Zellerbach Corp., which has an investment of more than $100,000,000 in timber and processing plants in British Columbia and contemplates extensive expansion in Newfoundland.

The corporation is determined to make its subsidiary, Crown Zellerbach Canada, Ltd., truly representative of its operations in Canada and not merely a source of revenue for the parent. To that end, shareholders of Crown Zellerbach Canada, Ltd., most of whom are Canadians, will get priority in receiving dividends on their ordinary shares. Their quarterly dividend has been restored to 25 cents per share from 12½ cents, subject to future earnings and other factors. Reduced dividends had been declared in the last quarter of 1957 and the first quarter of 1958.

Under this plan, which was recommended by President P. T. Sinclair and directors and approved by shareholders of CZC, the company will for the time being withhold payment of ordinary dividends to its majority shareholder, Crown Zellerbach Corp., San Francisco.

It would have been easy for the corporation to justify a reduction in the dividend rate by citing the decline in earnings, higher costs of production and lower prices. However, the more liberal course was followed, and it has been acclaimed in Canada as evidence of wise industrial statesmanship.

Actually, in order that the Canadian subsidiary might meet capital commitments and sustain announced dividend rates, the U.S. corporation loaned its affiliate a total of $18,755,228, of which $9,255,228 consisted of dividends.

A Vancouver newspaper commented: "The diplomatic accomplishments of J. D. Zellerbach, U.S. Ambassador to Italy, are unknown to us in this corner of the world. But the statesmanlike business policies over which he has presided as chairman of the Board of Crown Zellerbach Corp. restore the term 'good neighbor' to its proper perspective."

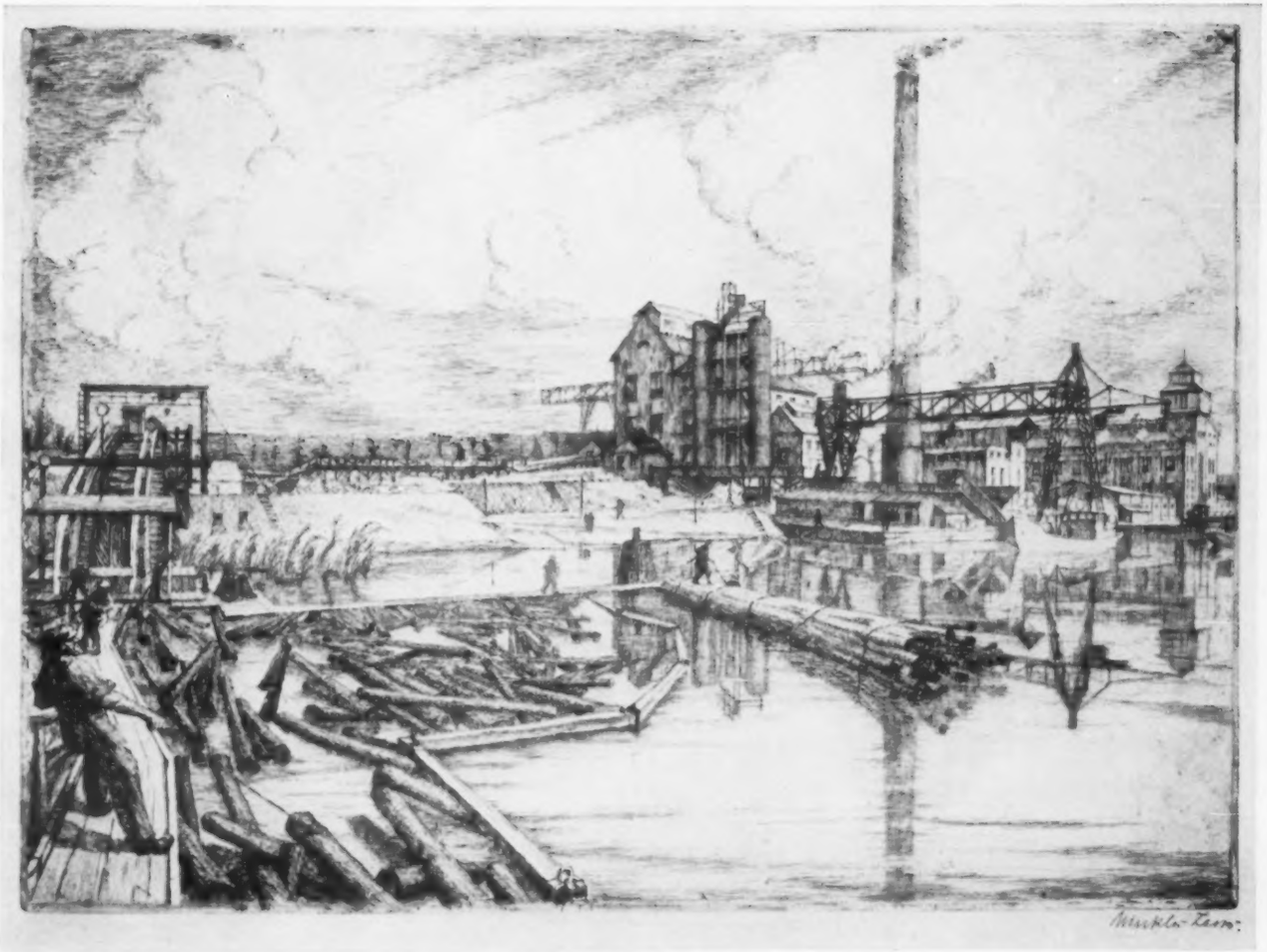
When Paper Took a Holiday

On the day paper and its allied products took a holiday, Joe Citizen came down to breakfast and found his morning paper missing. There was no fresh milk for breakfast because there were no paper cartons. When he arrived at work, Joe found that the morning mail would not arrive because paper had taken a holiday. No correspondence could be carried on; and the order, production, and other necessary forms to carry on his business were missing. The phone book was gone too.

Since no work could be conducted on the day paper took a holiday, Joe thought he would catch up on his reading–no paper, no magazines, no books. Although the day looked like a total loss, still it was payday. So before leaving work, Joe went to collect his pay. There was neither currency nor checks. Carrying an enormous cloth bag of coins, Joe hurried to meet his wife at the local grocery store.

At the store, confusion reigned. Beans, peas, rice and other groceries were piled in the aisles. Joe had to guess at canned goods–no labels. Breakfast food and butter came in heavy wooden boxes. The bread was stale because there was no wrapping paper. Finally collecting his purchases, Joe and his wife paid the highest prices for food they had ever experienced because the cheap paper packages had been replaced by more expensive materials. Joe and his wife started home. He carried a large wooden crate and his wife dragged a tattered cloth sack. There was no tough, lightweight (E-Z Opener) bags on the day paper took a holiday.

At home Joe Citizen and his family anxiously awaited the end of the worst day of their lives–the day paper took a holiday.–by Jim Montgomery, editor, "News Bag," published by Gulf States Paper Corp.



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